

## SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Wesley Nicolas Examiner #: 75,708 Date: 3/1/00  
 Art Unit: 1741 Phone Number 305-0082 Serial Number: 09/251,641  
 Mail Box and Bldg/Room Location: CP3-7607 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Method For Enhancing the Solderability of a Surface

Inventors (please provide full names): Ronald Redline, David Sawoska, Peter Kukonski

Earliest Priority Filing Date: 2/17/99

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

- Please Search claims 1-8 & 17-20 for process or solution containing said (in claims) compounds.

(\*) Search in reference (keyword) to "internal battery" or "replacement" plating.

- "Internal battery" plating is found in 205/85

- Applicant's "Immersion Plating" is defined as, "a process which results from a replacement reaction whereby the surface being plated dissolves into solution and at the same time the metal being plated deposits from the plating solution onto the surface."

## STAFF USE ONLY

Searcher: K. Fuller  
 Searcher Phone #: \_\_\_\_\_  
 Searcher Location: \_\_\_\_\_  
 Date Searcher Picked Up: 3/10/00  
 Date Completed: 3/10/00  
 Searcher Prep & Review Time: 30  
 Clerical Prep Time: \_\_\_\_\_  
 Online Time: 122 - 10:22

## Type of Search

## Vendors and cost where applicable

NA Sequence (#)	STN	<u>500</u>
AA Sequence (#)	Dialog	_____
Structure (#)	Questel/Orbit	_____
Bibliographic	Dr. Link	_____
Litigation	Lexis/Nexis	_____
Fulltext	Sequence Systems	_____
Patent Family	WWW/Internet	_____
Other	Other (specify)	_____



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## Search Results Feedback Form

The search results generated for your recent request are attached. If you have any questions or comments (compliments or complaints) about the scope or the results of the search, please contact the searcher whose name is circled below.

Kathleen Fuller 308-4290   Eric Linnell 308-4143   Tim Saunders 308-4139  
All the searchers are located in the library in CP3/4 3D62

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=> file hcaplus

FILE 'HCAPLUS' ENTERED AT 13:54:52 ON 10 MAR 2000  
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FILE COVERS 1967 - 10 Mar 2000 VOL 132 ISS 11  
 FILE LAST UPDATED: 9 Mar 2000 (20000309/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

This file supports REGISTRY for direct browsing and searching of all substance data from the REGISTRY file. Enter HELP FIRST for more information.

=> d que 1107

L66	3878	SEA FILE=HCAPLUS ABB=ON	(REPLAC? OR IMMERS?) (5A) PLAT?
L67	97	SEA FILE=HCAPLUS ABB=ON	L66 AND SOLDER?
L68	263737	SEA FILE=HCAPLUS ABB=ON	AG OR SILVER/BI,AB,RN
L69	19	SEA FILE=HCAPLUS ABB=ON	L67 AND L68
L71	1	SEA FILE=HCAPLUS ABB=ON	L69 AND (CU OR COPPER/AB,BI,RN OR METAL?) (4A) SURFACE?
L73	57	SEA FILE=HCAPLUS ABB=ON	L68 AND SOLDER? AND SURFACE?(5A)?TREAT?
L74	1	SEA FILE=HCAPLUS ABB=ON	L73 AND PLAT?(6A) SOLUTION?
L75	16	SEA FILE=HCAPLUS ABB=ON	L73 AND SOLN?
L76	15	SEA FILE=HCAPLUS ABB=ON	L73 AND SOLUTION?
L77	16	SEA FILE=HCAPLUS ABB=ON	L75 OR L76
L78	5	SEA FILE=HCAPLUS ABB=ON	L69 AND SOLUTION?
L83	1251	SEA FILE=HCAPLUS ABB=ON	L68 AND PLAT?(6A) SOLUTION?
L91	57	SEA FILE=HCAPLUS ABB=ON	L83 AND MOA/RL
L92	26	SEA FILE=HCAPLUS ABB=ON	L91 AND (CU OR COPPER OR METAL?)
L93	10	SEA FILE=HCAPLUS ABB=ON	L92 AND ELECT?/SC, SX
L94	29125	SEA FILE=HCAPLUS ABB=ON	L68 AND ?PLAT?
L95	1260	SEA FILE=HCAPLUS ABB=ON	L94 AND SOLDER?
L96	4	SEA FILE=HCAPLUS ABB=ON	L95 AND SOLUTION? AND MOA/RL
L97	6	SEA FILE=HCAPLUS ABB=ON	L95 AND SOLUTION? AND ?IMID?
L98	119	SEA FILE=HCAPLUS ABB=ON	MOA/RL(L)?PLAT?(L) SOLUTION?
L99	12	SEA FILE=HCAPLUS ABB=ON	L68 AND L98
L100	47	SEA FILE=HCAPLUS ABB=ON	L71 OR L74 OR L78 OR L77 OR L93 OR L96 OR L97 OR L99
L101	30	SEA FILE=HCAPLUS ABB=ON	L100 AND ELECTR?/SC, SX
L102	29	SEA FILE=HCAPLUS ABB=ON	L100 AND SOLDER?
L104	23	SEA FILE=HCAPLUS ABB=ON	L102 AND (CU OR COPPER OR METAL?)
L105	38	SEA FILE=HCAPLUS ABB=ON	L101 OR L104
L106	37	SEA FILE=HCAPLUS ABB=ON	L105 AND SOLUTION?
L107	32	SEA FILE=HCAPLUS ABB=ON	L106 NOT CERAMIC?/SC, SX

=> file wpids

FILE 'WPIDS' ENTERED AT 13:55:14 ON 10 MAR 2000  
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FILE LAST UPDATED: 08 MAR 2000 <20000308/UP>  
 >>>UPDATE WEEKS:  
 MOST RECENT DERWENT WEEK 200012 <200012/DW>  
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=> d que 1123

L108	5782	SEA FILE=WPIDS ABB=ON	(REPLAC? OR IMMERS?) (3A)?PLAT?
L109	159	SEA FILE=WPIDS ABB=ON	L108 AND (AG OR SILVER)
L110	10	SEA FILE=WPIDS ABB=ON	L109 AND SOLDER?
L111	4	SEA FILE=WPIDS ABB=ON	L110 AND C23C?/IC
L112	1588	SEA FILE=WPIDS ABB=ON	C23C?/IC AND SOLDER?
L113	160	SEA FILE=WPIDS ABB=ON	L112 AND (AG OR SILVER)
L114	6	SEA FILE=WPIDS ABB=ON	L113 AND SURFAC?(3A)?TREAT?
L115	75	SEA FILE=WPIDS ABB=ON	L113 AND ?PLAT?
L116	50	SEA FILE=WPIDS ABB=ON	L115 AND (CU OR COPPER)
L117	5	SEA FILE=WPIDS ABB=ON	L116 AND (SOLUTION? OR SOLN)
L118	0	SEA FILE=WPIDS ABB=ON	INTERNAL BATTER?(2A) PLATING
L119	33	SEA FILE=WPIDS ABB=ON	INTERNAL BATTER? AND PLAT?
L120	0	SEA FILE=WPIDS ABB=ON	L119 AND PLATING
L121	0	SEA FILE=WPIDS ABB=ON	L119 AND ?PLATING
L122	4	SEA FILE=WPIDS ABB=ON	L116 AND ?IMID?
L123	17	SEA FILE=WPIDS ABB=ON	L111 OR L114 OR L117 OR L118 OR L120 OR <u>L121</u> OR L122

=> file metadex

FILE 'METADEX' ENTERED AT 13:56:09 ON 10 MAR 2000  
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FILE LAST UPDATED: 02 FEB 2000 <20000202/UP>  
 FILE COVERS 1966 TO DATE.

=> d que 1129

L124	500	SEA FILE=METADEX ABB=ON	(IMMERS? OR REPLAC?) (3A)PLAT?
L125	63	SEA FILE=METADEX ABB=ON	(IMMERS? OR REPLAC?) (3A)ELECTROPLAT?
L126	17	SEA FILE=METADEX ABB=ON	(L125 OR L124) AND SOLDER?
L127	1	SEA FILE=METADEX ABB=ON	L126 AND (AG OR SILVER)
L128	10	SEA FILE=METADEX ABB=ON	SOLDER? AND (AG OR SILVER) AND <u>SURFAC?(3A)TREAT?</u>
L129	11	SEA FILE=METADEX ABB=ON	L127 OR L128

=> file inspec

FILE 'INSPEC' ENTERED AT 13:56:27 ON 10 MAR 2000  
 Compiled and produced by the IEE in association with FIZ KARLSRUHE  
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FILE LAST UPDATED: 02 MAR 2000 <20000302/UP>  
 KATHLEEN FULLER EIC 1700 308-4290

FILE COVERS 1969 TO DATE.

=> d que 1134

L124 500 SEA FILE=METADEX ABB=ON (IMMERS? OR REPLAC?) (3A) PLAT?  
 L125 63 SEA FILE=METADEX ABB=ON (IMMERS? OR REPLAC?) (3A) ELECTROPLAT?  
 L126 17 SEA FILE=METADEX ABB=ON (L125 OR L124) AND SOLDER?  
 L127 1 SEA FILE=METADEX ABB=ON L126 AND (AG OR SILVER)  
 L128 10 SEA FILE=METADEX ABB=ON SOLDER? AND (AG OR SILVER) AND  
     SURFAC? (3A) TREAT?  
 L130 26 SEA FILE=INSPEC ABB=ON L127 OR L128  
 L131 0 SEA FILE=INSPEC ABB=ON L130 AND (BATH# OR SOLN OR SOLUTION?)  
 L132 10 SEA FILE=INSPEC ABB=ON L130 AND (CU OR COPPER)  
 L133 4 SEA FILE=INSPEC ABB=ON L132 AND (PLATING OR ELECTROPLAT?)  
 L134 4 SEA FILE=INSPEC ABB=ON L131 OR L133

=> file compendex

FILE 'COMPENDEX' ENTERED AT 13:56:44 ON 10 MAR 2000  
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FILE LAST UPDATED: 09 MAR 2000 <20000309/UP>  
 FILE COVERS 1970 TO DATE.

=> d que 1140

L136 18 SEA FILE=COMPENDEX ABB=ON (AG OR SILVER) (3A) PLATING (3A) (BATH?  
     OR SOLN)  
 L137 1 SEA FILE=COMPENDEX ABB=ON L136 AND SOLDER?  
 L139 14 SEA FILE=COMPENDEX ABB=ON L136 AND (CU OR COPPER OR SURFACE?  
     OR METAL?)  
 L140 15 SEA FILE=COMPENDEX ABB=ON L137 OR L139

=> dup rem 1107 1123 1129 1134 1140

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 PROCESSING COMPLETED FOR L107  
 PROCESSING COMPLETED FOR L123  
 PROCESSING COMPLETED FOR L129  
 PROCESSING COMPLETED FOR L134  
 PROCESSING COMPLETED FOR L140  
 L141 77 DUP REM L107 L123 L129 L134 L140 (2 DUPLICATES REMOVED)

=> d 1141 1-77 all

L141 ANSWER 1 OF 77 HCAPLUS COPYRIGHT 2000 ACS  
 AN 2000:67603 HCAPLUS  
 DN 132:115274  
 TI Manufacture of color filter by photoelectrodeposition  
 IN Akutsu, Eichi; Ohtsu, Shigemi; Shimizu, Keiji; Fu, Ryujun  
 PA Fuji Xerox Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 15 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM G02B005-20  
 ICS G02B005-00; G02F001-1335  
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 Section cross-reference(s): 72  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000028821	A2	20000128	JP 1998-197564	19980713
AB	The manuf. method involves (1) immersing a photosemiconductive thin film on a light-transmitting elec. conductive film formed on a light-transmitting substrate in a coloring electrodeposition material-based soln., (2) applying voltage or current to the conductive film and image-exposing on the substrate to form a color electrodeposition film on a photoirradiated region, (3) immersing the semiconductor film in a metal plating soln., and (4) applying voltage or current to the conductive film to form a black matrix of the plating film on the semiconductor film on which the electrodeposition film is not formed. The manuf. method involves (1) immersing a photosemiconductor thin film on a light-transmitting elec. conductive film formed on a light-transmitting substrate in a metal plating soln., (2) applying voltage or current to the conductive film and image-exposing onto the substrate to form a metal plating film-based black matrix, (3) immersing the film in a color electrodeposition material-based soln., and (4) applying voltage or current to the conductive film and image-exposing on the substrate to form a color electrodeposition film on a photoirradiated region. The filter with high resoln. and light transmittance is manufd. by the method without a photolithog. process at lower cost.				
ST	color filter black matrix photoelectrodeposition; metal plating color filter manuf				
IT	Electroplating Optical filters (manuf. of metal plating film-based black matrix color filter by photoelectrodeposition)				
IT	Electrodeposition (photochem.; manuf. of metal plating film-based black matrix color filter by photoelectrodeposition)				
IT	7439-98-7, Molybdenum, uses 7440-22-4, Silver, uses 7440-31-5, Tin, uses 7440-47-3, Chromium, uses 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses 7440-57-5, Gold, uses 7440-66-6, Zinc, uses RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses) (manuf. of black matrix color filter by photoelectrodeposition)				
IT	409-21-2, Silicon carbide, uses 1313-27-5, Molybdenum oxide, uses 1313-99-1, Nickel oxide, uses 1314-13-2, Zinc oxide, uses 1317-36-8, Lead oxide, uses 1332-29-2, Tin oxide 7440-21-3, Silicon, uses 13463-67-7, Titania, uses RL: DEV (Device component use); USES (Uses) (manuf. of metal plating film-based black matrix color filter by photoelectrodeposition)				
IT	7440-02-0, Nickel, uses				

RL: DEV (Device component use); MOA (Modifier or additive use);  
 USES (Uses)  
 (manuf. of **metal** plating film-based black matrix color filter  
 by photoelectrodeposition)

L141 ANSWER 2 OF 77 HCAPLUS COPYRIGHT 2000 ACS  
 AN 1999:626113 HCAPLUS  
 DN 131:232105  
 TI Monolayer coating with alkylthiol for tarnish resistance of decorative  
**metal** articles  
 IN Waldeck, David H.; Burleigh, Thomas David; Gu, Yuepeng  
 PA University of Pittsburgh, USA  
 SO PCT Int. Appl., 73 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 IC ICM B32B015-04  
 ICS B32B031-00  
 CC 56-6 (Nonferrous Metals and Alloys)  
 Section cross-reference(s): 42  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9948682	A1	19990930	WO 1999-US6775	19990329
W: CA, KR, MX				
PRAI US 1998-49530		19980327		
US 1999-250614		19990216		
US 1999-251226		19990216		

AB The tarnish-resistant film on a cleaned **Ag** or **Cu**  
 surface is applied as a self-assembled monolayer, and is nontoxic,  
 flexible, and **solderable**. The monolayer is preferably an  
 alkylthiol with C8-18 chain length, is optionally fluorinated, and can be  
 applied from an alkylthiol **soln**. The **Ag** or **Cu**  
**surface** is typically **pretreated** by org. washing and  
 acidic etching, followed by the alkylthiolation. The **Cu** surface  
 coated with the monolayer of C14-chain monolayer from EtOH **soln**.  
 showed discoloration in .apprx.7 h in an accelerated test, vs. <0.5 h when  
 degreased without the coating. The coating process is suitable for  
 jewelry, silverware, coins, and mirrors.

ST alkylthiol monolayer coating tarnish resistance **metal**;  
**silver** surface tarnish resistance org thiol film; **copper**  
 surface tarnish resistance alkylthiol film

IT Jewelry  
 Mirrors  
 (coating of; monolayer film of alkylthiol for tarnish resistance of  
 decorative **metal** articles)

IT Monolayers  
 (films; monolayer film of alkylthiol for tarnish resistance of  
 decorative **metal** articles)

IT Thiols (organic), uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (films; monolayer film of alkylthiol for tarnish resistance of  
 decorative **metal** articles)

IT Household furnishings  
 (silverware, coating of; monolayer film of alkylthiol for tarnish  
 resistance of decorative **metal** articles)

IT 7440-22-4, **Silver**, uses 7440-50-8, **Copper**, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (coating of; monolayer film of alkylthiol for tarnish resistance of  
 decorative **metal** articles)

IT 7664-93-9, Sulfuric acid, processes  
 RL: PEP (Physical, engineering or chemical process); PROC (Process)  
 (etching with; monolayer film of alkylthiol for tarnish resistance of  
**metal** after acidic etching)

L141 ANSWER 3 OF 77 HCAPLUS COPYRIGHT 2000 ACS

AN 1999:690298 HCAPLUS

DN 131:294222

TI Varistors for overvoltage protection and their manufacture

IN Sasaki, Riho; Tanba, Hiroshi; Onomi, Tadashi; Sasaki, Yasuhiko; Kato, Atsushi

PA Matsushita Electric Industrial Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01C007-10

ICS H01C017-06

CC 76-2 (Electric Phenomena)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI JP 11297507 A2 19991029 JP 1998-97261 19980409

AB The varistors have electrodes consisting of **metal** components and polymer components. The varistors are manufd. by applying **metal** electrode pastes on varistor moldings, firing the moldings and the pastes simultaneously, and forming electrodes contg. **metal** components and polymer components on the resulting **metal** electrodes. The varistors may be manufd. by forming electrodes contg. **metal** components and polymer components on varistor bodies and forming plating layers on the electrodes using **plating** soln. with pH .gt;req.3. Phase transition of grain boundary substances in firing for formation of the electrodes is prevented because of decrease of firing temp.

ST varistor **metal** polymer composite electrode overvoltage protection; **silver** epoxy resin composite electrode varistor; phenolic resin **silver** composite electrode varistor; nickel **electroplating** polymer composite electrode varistor

IT Solders

(**electroplated**; manuf. of varistors having **metal** -polymer composite electrodes for overvoltage protection)

IT Electrodes

**Electroplating**

Varistors

(manuf. of varistors having **metal-polymer** composite electrodes for overvoltage protection)

IT Epoxy resins, uses

Phenolic resins, uses

RL: DEV (Device component use); USES (Uses)

(manuf. of varistors having **metal-polymer** composite electrodes for overvoltage protection)

IT 7631-86-9, Silica, uses

RL: DEV (Device component use); USES (Uses)

(coatings; manuf. of varistors having **metal-polymer** composite electrodes for overvoltage protection)

IT 7440-02-0, Nickel, uses

RL: DEV (Device component use); USES (Uses)

(**electroplated**; manuf. of varistors having **metal** -polymer composite electrodes for overvoltage protection)

IT 1314-13-2, Zinc oxide, uses 7440-22-4, **Silver**, uses

RL: DEV (Device component use); USES (Uses)

(manuf. of varistors having **metal-polymer** composite electrodes for overvoltage protection)

IT 1304-76-3, Bismuth oxide (Bi2O3), uses 1309-64-4, Antimony oxide (Sb2O3), uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(manuf. of varistors having **metal-polymer** composite

KATHLEEN FULLER EIC 1700 308-4290

electrodes for overvoltage protection)

L141 ANSWER 4 OF 77 HCAPLUS COPYRIGHT 2000 ACS  
 AN 1999:209821 HCAPLUS  
 DN 130:283482  
 TI Electroconductive polyolefin compositions with good storage stability  
 IN Sasaki, Shingo; Kawashima, Kazuto  
 PA Dia Bond Kogyo K. K., Japan; Unitika Ltd.  
 SO Jpn. Kokai Tokkyo Koho, 4 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM C08L023-26  
 ICS C08K009-02  
 CC 42-10 (Coatings, Inks, and Related Products)  
 Section cross-reference(s): 76  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11080463	A2	19990326	JP 1997-252605	19970903
AB	Title compns., suitable for coatings and adhesives showing improved adhesive strength to substrates, are obtained by dissolving or dispersing (A) 10-30 parts modified polyolefin compns. in (B) 70-90 parts arom. hydrocarbon solvents to form a soln. or an emulsion, and dispersing (C) 10-300 parts (based on 100 parts A) electroconductive fine particles consisting of spherical carbon fine particles [av. particle size (APS) .ltoreq.200 .mu.m] or metal-plated spherical carbon fine particles in the soln. or the emulsion. Thus, Ag-plated GCP-10H (glassy carbon; APS = 9 .mu.m) was dispersed in a soln. contg. Evaflex 250 (EVA) 10, YS 2130 (terpene-phenol resin) 5, and toluene 85 parts to give a compn., which showed good storage stability and gave a coating film with good elec. cond. and peeling strength.				
ST	electroconductive polyolefin compn storage stability; bonding property electroconductive polyolefin compn; arom hydrocarbon solvent polyolefin compn; carbon particle electroconductive polyolefin compn				
IT	Adhesives (electroconductive polyolefin compns. with good storage stability and bonding property for adhesives)				
IT	Electrically conductive coatings (electroconductive polyolefin compns. with good storage stability and bonding property for coatings)				
IT	Polyolefins RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses) (electroconductive polyolefin compns. with good storage stability and bonding property for coatings and adhesives)				
IT	Electric conductors (metal-plated carbon; electroconductive polyolefin compns. with good storage stability and bonding property for coatings and adhesives)				
IT	Phenols, uses RL: MOA (Modifier or additive use); USES (Uses) (polymers, with terpenes; electroconductive polyolefin compns. with good storage stability and bonding property for coatings and adhesives)				
IT	Terpene polymers RL: MOA (Modifier or additive use); USES (Uses) (with phenols; electroconductive polyolefin compns. with good storage stability and bonding property for coatings and adhesives)				
IT	171713-33-0, YS Polyester 2130 RL: MOA (Modifier or additive use); USES (Uses) (electroconductive polyolefin compns. with good storage stability and bonding property for coatings and adhesives)				
IT	24937-78-8, Evaflex 250				

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)  
 (electroconductive polyolefin compns. with good storage stability and bonding property for coatings and adhesives)

IT 7440-44-0, Glassy carbon, uses  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (glassy, GCP 10H, electroconductive fine particles; electroconductive polyolefin compns. with good storage stability and bonding property for coatings and adhesives)

IT 7440-02-0, Nickel, uses 7440-22-4, Silver, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (spherical carbon fine particles for elec. conductors plated with)

L141 ANSWER 5 OF 77 HCAPLUS COPYRIGHT 2000 ACS

AN 1999:111939 HCAPLUS

DN 130:161941

TI Metal paste with good adhesion strength for outer electrode of laminated ceramic capacitor

IN Naya, Masakuni

PA Sumitomo Metal Mining Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01B001-16

      ICS H01G004-252; H01G004-12

CC 76-10 (Electric Phenomena)

      Section cross-reference(s): 56

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 11039944	A2	19990212	JP 1997-214048	19970724

AB The paste, for a ceramic capacitor comprising an alternative laminate of dielec. layers and inner electrodes, contains an org. vehicle, glass frits, and metal powders consisting of 100 parts Cu and 1-20 parts Ag. The paste shows good sinterability and adhesion strength and high resistance to penetration of a Ni plating soln.

ST copper silver paste outer electrode capacitor;  
 silver sintering aid copper conducting paste; laminated ceramic capacitor copper silver paste

IT Electrically conductive pastes

Electrodes

Multilayer ceramic capacitors

Sintering aids

      (silver-contg. copper paste for outer electrode of laminated ceramic capacitor)

IT 7440-50-8, Copper, uses

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

      (silver-contg. copper paste for outer electrode of laminated ceramic capacitor)

IT 7440-22-4, Silver, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

      (sintering aids; silver-contg. copper paste for outer electrode of laminated ceramic capacitor)

L141 ANSWER 6 OF 77 HCAPLUS COPYRIGHT 2000 ACS

AN 1999:65536 HCAPLUS

DN 130:131028

TI Electroplating of tin-silver alloy and electric/electronic device therefrom with good solderability

IN Masaki, Masafumi; Takeuchi, Takao; Kondo, Tetsuya; Kobata, Keigo; Aoki,

KATHLEEN FULLER EIC 1700 308-4290

PA Kazuhiro; Nawafune, Hidemi  
 SO Daiwa Kasei Kenkyusho K. K., Japan; Ishihara Yakuhin Co., Ltd.  
 Jpn. Kokai Tokkyo Koho, 19 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C25D003-60

ICS C25D003-56

CC 72-8 (Electrochemistry)

Section cross-reference(s): 56, 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11021692	A2	19990126	JP 1997-188952	19970701
OS	MARPAT 130:131028				

AB The process uses (i) a bath contg. Sn<sup>2+</sup> (or Sn<sup>4+</sup>), Ag<sup>1+</sup>, and chelating agents for Ag and Sn, (ii) a partition wall or a sepn. membrane between the cathode soln. from the anode soln., (iii) an aq. anode soln. contg. Sn<sup>2+</sup> (or Sn<sup>4+</sup>) and acids, alkalies, and/or chelating agents for sufficient amt. to dissolve Sn. The sepn. membrane may be an ion-exchanging membrane. The Sn-Ag alloy plating film from the process showed good appearance.

ST electroplating tin silver alloy sepn membrane; cation exchange membrane electroplating bath contg; mercaptosuccinic acid chelating agent electroplating bath; fiber filter sepd electroplating bath electrode; methylhydantoin silver chelating agent electroplating bath

IT Cation exchange membranes

Chelating agents

Electric apparatus

Electroplating

Fiber filters

Membranes (nonbiological)

Partition

(electroplating of Sn-Ag alloy using sepn. membrane between cathode soln. and anode soln. for elec. devices)

IT 7440-44-0, Carbon, uses

RL: DEV (Device component use); USES (Uses)  
 (activated, anode coating; electroplating of Sn-Ag alloy using sepn. membrane between cathode soln. and anode soln. for elec. devices)

IT 50-81-7, Ascorbic acid, uses 56-40-6, Glycine, uses 64-02-8, EDTA tetrasodium salt 68-11-1, Mercaptoacetic acid, uses 70-49-5, Mercaptosuccinic acid 77-71-4, 5,5-Dimethylhydantoin 79-42-5, 2-Mercaptopropionic acid 102-71-6, Triethanolamine, uses 107-96-0 127-09-3 288-32-4, Imidazole, uses 299-27-4, Potassium gluconate 304-59-6, Potassium sodium tartrate 526-95-4, D-Gluconic acid 527-07-1, Sodium gluconate 616-91-1, Acetylcysteine 7320-34-5, Potassium pyrophosphate 7681-11-0, Potassium iodide, uses 7778-77-0, Dihydrogen potassium phosphate 17636-10-1, Sodium 3-mercaptopropanesulfonate

RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)  
 (chelating agents; electroplating of Sn-Ag alloy using sepn. membrane between cathode soln. and anode soln. for elec. devices)

IT 152787-40-1, Neosepta CMH

RL: DEV (Device component use); USES (Uses)  
 (electrode-sepn. membrane; electroplating of Sn-Ag alloy using sepn. membrane between cathode soln. and anode soln. for elec. devices)

IT 11144-61-9P 63807-21-6P 202135-03-3P 219922-95-9P

RL: DEV (Device component use); IMF (Industrial manufacture); PREP

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(Preparation); USES (Uses)

(electroplating of Sn-Ag alloy using sepn. membrane  
between cathode **soln.** and anode **soln.** for elec.  
devices)

IT 563-63-3, **Silver** acetate 2386-52-9, **Silver**  
methanesulfonate 7646-78-8, Tin(IV) chloride, uses 7718-54-9, Nickel  
chloride, uses 7761-88-8, Nitric acid **silver(1+)** salt, uses  
7772-99-8, Tin(II) chloride, uses 7783-96-2, **Silver** iodide  
10031-62-6, Tin sulfate 12142-33-5, Potassium stannate 19372-21-5,  
Cupric pyrophosphate 23606-32-8, Diamminesilver(I) nitrate 71884-48-5  
95860-13-2, Tin methanesulfonate  
RL: TEM (Technical or engineered material use); USES (Uses)  
(electroplating of Sn-Ag alloy using sepn. membrane  
between cathode **soln.** and anode **soln.** for elec.  
devices)

L141 ANSWER 7 OF 77 COMPENDEX COPYRIGHT 2000 EI

AN 1999(36):970 COMPENDEX

TI Palladium-silver composite membranes by electroless plating technique.

AU Cheng, Y.S. (Hong Kong Univ of Science and Technology, Kowloon, Hong Kong); Yeung, K.L.

SO Journal of Membrane Science v 158 n 1 1999.p 127-141

CODEN: JMESDO ISSN: 0376-7388

PY 1999

DT Journal

TC Theoretical; Experimental

LA English

AB The exact conditions for deposition of pure palladium and pure silver membranes as well as simultaneous, co-deposition of palladium and silver have been identified for hydrazine-based plating bath containing both palladium and silver precursors. The electroless plating kinetics have been determined for co-deposition of palladium and **silver** from the mixed **plating bath**. A mathematical model has been developed to predict the film thickness, plating rate and composition profile as a function of plating parameters (i.e., reactant concentrations and time). The evolution of the microstructure and composition of the film during electroless plating has also been investigated. A hydrogen permeation study has demonstrated that the Pd-Ag alloy membrane has superior performance compared to a pure palladium membrane of similar thickness. In addition, the formation of a single-phase alloy results in substantial enhancement in the hydrogen permeation rate. (Author abstract)  
41 Refs.

CC 547.1 Precious Metals; 415 Metals, Plastics, Wood and Other Structural Materials; 539.3.2 Electroless Plating; 802.2 Chemical Reactions; 921.6 Numerical Methods; 801.4 Physical Chemistry

CT \*Membranes; Hydrogen; Composite materials; Electroless plating; Reaction kinetics; Mathematical models; Microstructure; Composition; Palladium alloys; Silver alloys

ST Hydrazine based plating bath; Hydrogen permeation; Film thickness; Plating rate; Composition profile; Gas and vapor permeation; Membrane preparation and structure; **Metal** membranes

ET Ag\*Pd; Ag sy 2; sy 2; Pd sy 2; Pd-Ag

L141 ANSWER 8 OF 77 HCAPLUS COPYRIGHT 2000 ACS

AN 1998:672706 HCAPLUS

DN 129:267074

TI Electrolytic method for recovering and recycling **silver** from a nitric **solution**

IN Bourges, Jacques; Broudic, Jean-Charles; Dauby, Jacques; Leboucher, Isabelle; Leclerc, Olivier; Baticle, Pascal

PA Commissariat a l'Energie Atomique, Fr.; Compagnie Generale des Matieres Nucleaires

SO PCT Int. Appl., 35 pp.

CODEN: PIXXD2

DT Patent  
 LA French  
 IC ICM C25C001-20  
 ICS C25B001-00; G21F009-06

CC 72-8 (Electrochemistry)  
 Section cross-reference(s): 56, 71

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9842894	A1	19981001	WO 1998-FR580	19980323
	W: JP, RU, US			RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE	
	FR 2761085	A1	19980925	FR 1997-3552	19970324
	FR 2761085	B1	19990416		
	EP 970263	A1	20000112	EP 1998-917210	19980323
	R: BE, DE, FR, GB				

PRAI FR 1997-3552 19970324  
 WO 1998-FR580 19980323

AB The invention concerns an electrolytic method for selectively recovering and recycling **silver** from a nitric soln. contg. same in the form of **Ag(I)**. The method consists in successive steps of electrolytic deposition of **silver** in the form of **metal silver Ag(0)** then in re-solubilizing the deposited **silver Ag(0)**, to produce a **silver Ag(0)** soln. as end product wherein said electrolytic deposition is carried out at an imposed intensity and said successive electrolytic deposition of **silver** and the re-solubilizing of the deposited **silver** are carried out in the same app. The invention also concerns in particular the selective recovery of **Ag(I)** by redn. into **metal Ag** from nitric solns. derived from the treatment of plutonium-bearing wastes in nuclear fuel treating plants and the re-solubilizing of **metal Ag** into **Ag(I)** for its recycling upstream of the process.

ST electrodeposition recovering recycling **silver** nitric soln; plutonium waste nuclear fuel **silver** electrodeposition

IT Electrolytic cells  
 (for selective electrodeposition of **silver** from a nitric soln. contg. **metal** ions)

IT Dissolution  
 (of **silver** electrodeposited on stainless steel or platinum cathode from nitric soln. contg. **metal** ions)

IT Recycling  
 (of **silver** from a nitric soln. contg. **metal** ions)

IT Electrochemical reduction  
 (of **silver** in nitric soln. contg. different **metals** including radioactive **metals**)

IT Radioactive wastes  
 (selective electrodeposition of **silver** from)

IT Rare earth **metals**, properties  
 RL: OCU (Occurrence, unclassified); PRP (Properties); OCCU (Occurrence)  
 (selective electrodeposition of **silver** from a nitric soln. contg.)

IT Wastewater precipitation  
 (selective electrodeposition of **silver** from a nitric soln. contg. radioactive **metals**)

IT Electrodeposition  
 (selective; selective electrodeposition of **silver** from a nitric soln. contg. **metal** ions)

IT 7697-37-2, Nitric acid, uses  
 RL: NUU (Nonbiological use, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); PROC (Process); USES

(Uses)  
(dissoln. of **silver** after its selective electrodeposition from nitric solns. contg. different **metal** ions)

IT 7440-22-4, **Silver**, properties  
RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); FORM (Formation, nonpreparative); PROC (Process)  
(electrolytic method for recovering and recycling from a nitric soln.)

IT 14701-21-4, **Silver** 1+, properties  
RL: PRP (Properties)  
(electrolytic method for recovering and recycling **silver** from a nitric soln. contg. **metal** ions and)

IT 7440-32-6, Titanium, uses  
RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(modified with RuO<sub>2</sub> or IrO<sub>2</sub>; recovering and recycling **silver** from a nitric soln. contg. **metal** ions in electrolytic cell with anode from)

IT 7440-06-4, Platinum, uses 11134-23-9  
RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(recovering and recycling **silver** from a nitric soln. contg. **metal** ions in electrolytic cell with anode from)

IT 12030-49-8, Iridium oxide IrO<sub>2</sub> 12036-10-1, Ruthenium oxide RuO<sub>2</sub>  
RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(recovering and recycling **silver** from a nitric soln. contg. **metal** ions in electrolytic cell with titanium anode modified by)

IT 7439-89-6, Iron, properties 7439-95-4, Magnesium, properties  
7439-96-5, Manganese, properties 7439-99-8, Neptunium, properties  
7440-02-0, Nickel, properties 7440-07-5, Plutonium, properties  
7440-35-9, Americium, properties 7440-47-3, Chromium, properties  
7440-51-9, Curium, properties 7440-61-1, Uranium, properties  
7440-66-6, Zinc, properties  
RL: OCU (Occurrence, unclassified); PRP (Properties); OCCU (Occurrence)  
(selective electrodeposition of **silver** from a nitric soln. contg.)

IT 57-13-6, Urea, uses  
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)  
(using in electrolytic method for recovering and recycling **silver** from a nitric soln. contg. **metal** ions)

IT 7722-84-1, Hydrogen peroxide, properties  
RL: PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); PROC (Process)  
(using in electrolytic method for recovering and recycling **silver** from a nitric soln. contg. **metal** ions)

L141 ANSWER 9 OF 77 HCAPLUS COPYRIGHT 2000 ACS

AN 1998:543202 HCAPLUS

DN 129:139433

TI Electroforming of hollow jewelry articles using fusible **metal** mandrels with interlayer coating

IN Teichmann, Robert J.; Cupolo, Dennis A.; China, Robert H.; Pahlck, Harold

PA Avon Products, Inc., USA

SO PCT Int. Appl., 35 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C25D001-02

ICS C25D001-00

CC 56-11 (Nonferrous Metals and Alloys)

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 9833957	A1	19980806	WO 1998-US73	19980204
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
US 5891317	A	19990406	US 1997-796021	19970204
AU 9861307	A1	19980825	AU 1998-61307	19980204
PRAI US 1997-796021		19970204		
WO 1998-US73		19980204		
AB Hollow <b>metal</b> jewelry or similar decorative articles are manufd. by: (a) coating a fusible-alloy mandrel with a <b>base-metal</b> interlayer system; (b) applying a decorative layer of precious metal on the base <b>metal</b> ; (c) applying an outer layer of inorg. protective coating (esp. as silicone polymer) on the precious metal; (d) melting out the fusible alloy mandrel; and (e) optionally removing the inorg. coating. The <b>base-metal</b> interlayer system is preferably applied with Sn or Zn alloy, and includes barrier film to molten Sn as well as Cu film for adhesion layer to decrease the thickness of precious <b>metal</b> . After melting out the fusible-alloy mandrel, the jewelry articles are preferably leached in acidic <b>soln.</b> (esp. <b>solder</b> -stripping type) to remove the mandrel residues. The process is suitable for manuf. of hollow jewelry by <b>electroplating</b> the precoated mandrel with Au, Ag, Pt, Pd, or other precious <b>metals</b> .				
ST electroforming hollow jewelry mandrel coating; fusible <b>metal</b> mandrel electroforming jewelry; gold coating hollow jewelry fusible mandrel				
IT Polysiloxanes, uses				
RL: <b>MOA (Modifier or additive use); USES (Uses)</b> (coating with; electroforming of hollow jewelry on fusible mandrels with interlayer coating)				
IT Electroplating				
(for jewelry; electroforming of hollow jewelry on fusible mandrels with interlayer coating)				
IT Mandrels				
(fusible, for jewelry; electroforming of hollow jewelry on fusible mandrels with interlayer coating)				
IT Jewelry				
(hollow; electroforming of hollow jewelry on fusible mandrels with interlayer coating)				
IT Refractory metals				
RL: <b>MOA (Modifier or additive use); USES (Uses)</b> (interlayer with; electroforming of hollow jewelry on fusible mandrels with interlayer coating)				
IT Precious metals				
RL: <b>DEV (Device component use); USES (Uses)</b> (jewelry with; electroforming of hollow jewelry on fusible mandrels with interlayer coating)				
IT Cleaning				
(striping, of mandrel residues; electroforming of hollow jewelry on fusible mandrels with interlayer coating)				
IT 1344-09-8, Water glass 7631-86-9, Silica, uses				
RL: <b>MOA (Modifier or additive use); USES (Uses)</b> (coating with; electroforming of hollow jewelry on fusible mandrels with interlayer coating)				
IT 37263-08-4				
RL: <b>DEV (Device component use); USES (Uses)</b> (fusible mandrels; electroforming of hollow jewelry on fusible mandrels.				

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with interlayer coating)  
 IT 7440-50-8, Copper, uses  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (interlayer with, for adhesion; electroforming of hollow jewelry on  
 fusible mandrels with interlayer coating)  
 IT 7439-89-6, Iron, uses 7440-47-3, Chromium, uses  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (interlayer with; electroforming of hollow jewelry on fusible mandrels  
 with interlayer coating)  
 IT 7440-31-5, Tin, processes  
 RL: REM (Removal or disposal); PROC (Process)  
 (molten, barrier for; electroforming of hollow jewelry on fusible  
 mandrels with interlayer coating)

L141 ANSWER 10 OF 77 HCAPLUS COPYRIGHT 2000 ACS

AN 1999:21549 HCAPLUS

DN 130:87400

TI Low friction, ductile, multilayer electrodeposits

IN Souza, Theresa R.; Molvar, Allen E.

PA Handy & Harman, USA

SO U.S., 8 pp., Cont.-in-part of U.S. 5,667,659.

CODEN: USXXAM

DT Patent

LA English

IC ICM C25D015-00

NCL 205109000

CC 72-8 (Electrochemistry)

Section cross-reference(s): 38, 55, 56

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5853557	A	19981229	US 1997-833009	19970404
	US 5667659	A	19970916	US 1996-627542	19960404

PRAI US 1996-627542 19960404

AB The present invention relates to composite articles including a surface layer of tin, lead, silver or an alloy thereof that contains co-deposited non-ionic polymeric particles to provide a reduced-friction deposit that has an initially low coeff. of friction and low insertion force and fretting corrosion in separable electronic connectors, and to methods for prep. the plated articles. The polymeric particles have a size between about 0.1 to 0.45 .mu.m in diam. to reduce the coeff. of friction of the resultant deposit to about 0.45 or below. Also, the deposit has excellent elec. properties and can be successfully soldered. The invention also relates to a soln. for plating the surface layer of the composite articles, which surface layer reduces insertion force and fretting corrosion of separable electronic connectors.

ST electrodeposit low friction ductile multilayer electronic connector; fluoropolymer metals alloy multilayer electrodeposit solderable

IT Fluoropolymers, uses

RL: NUU (Nonbiological use, unclassified); PRP (Properties); USES (Uses)  
 (Teflon TE 3667N; particles, component of low friction, ductile,  
 multilayer electrodeposits)

IT Antioxidants

Surfactants

(electrodeposition of low friction, ductile, multilayer electrodeposits  
 from soln. contg.)

IT Sulfonates

Sulfonic acids, uses

RL: NUU (Nonbiological use, unclassified); PRP (Properties); USES (Uses)  
 (electrodeposition of low friction, ductile, multilayer electrodeposits  
 from soln. contg.)

IT Polysiloxanes, uses

RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)  
 (ethoxylated, Masil SF 19; electrodeposition of low friction, ductile, multilayer electrodeposits from soln. contg.)

IT Friction  
 (low friction, ductile, multilayer electrodeposits)

IT Electronic device fabrication  
 (low friction, ductile, multilayer electrodeposits for)

IT Electrodeposits  
 (low friction, ductile, multilayer electrodeposits for electronic connectors)

IT Multilayers  
 (low friction, ductile, multilayer electrodeposits for prep. the plated articles)

IT Particles  
 (of fluorocarbons, components of low friction, ductile, multilayer electrodeposits for prep. the plated articles)

IT Electrodeposition  
**Soldering**  
 (of low friction, ductile, multilayer electrodeposits)

IT Thickness  
 (of low friction, ductile, multilayer electrodeposits for electronic device fabrication)

IT Electroplating  
 (of metal substrate by low friction, ductile, multilayer electrodeposits)

IT Contact resistance  
 (of metal substrate plated by low friction, ductile, multilayer electrodeposits)

IT Fluoropolymers, uses  
 RL: NUU (Nonbiological use, unclassified); PRP (Properties); USES (Uses)  
 (particles, component of low friction, ductile, multilayer electrodeposits)

IT 9038-95-3, Macol 300  
 RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)  
 (Macol 300, surfactant; electrodeposition of low friction, ductile, multilayer electrodeposits from soln. contg.)

IT 9002-84-0, Polytetrafluoroethylene  
 RL: NUU (Nonbiological use, unclassified); PRP (Properties); USES (Uses)  
 (Teflon TE 3667N; particles, component of low friction, ductile, multilayer electrodeposits)

IT 7439-89-6, Iron, properties 7440-02-0, Nickel, properties 7440-48-4, Cobalt, properties 12647-03-9  
 RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)  
 (barrier layer of low friction, ductile, multilayer electrodeposits)

IT 75-75-2, Methanesulfonic acid 594-45-6, Ethanesulfonic acid 7664-93-9, Sulfuric acid, uses 28553-80-2, Propanesulfonic acid  
 RL: NUU (Nonbiological use, unclassified); PRP (Properties); USES (Uses)  
 (electrodeposition of low friction, ductile, multilayer electrodeposits from soln. contg.)

IT 7439-92-1, Lead, properties 7440-31-5, Tin, properties 12597-71-6, Brass, properties 56925-19-0  
 RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)  
 (surface layer of low friction, ductile, multilayer electrodeposits)

IT 7440-22-4, Silver, properties  
 RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)  
 (surface or barrier layer of low friction, ductile, multilayer electrodeposits)

AN 1998:773572 HCPLUS  
 DN 130:131002  
 TI Dynamical characterization of one-dimensional stationary growth regimes in diffusion-limited electrodeposition processes  
 AU Leger, C.; Elezgaray, J.; Argoul, F.  
 CS Centre de Recherche Paul Pascal, Avenue Schweitzer, Pessac, 33600, Fr.  
 SO Phys. Rev. E: Stat. Phys., Plasmas, Fluids, Relat. Interdiscip. Top. (1998), 58(6-B), 7700-7709  
 CODEN: PLEEE8; ISSN: 1063-651X  
 PB American Physical Society  
 DT Journal  
 LA English  
 CC 72-8 (Electrochemistry)  
 Section cross-reference(s): 56  
 AB The occurrence of stationary growth regimes in thin gap electrodeposition expts. is discussed in terms of diffusion-limited dynamics and confirmed by a quant. interferometric anal. of concn. fields during **copper** electrodeposition in 50-.mu.m cells, with unsupported electrolytes. We develop a 1D model for the time evolution of the averaged concn. profile after Sand's time and we check its predictions during the transitory and asymptotic growth regimes in electrodeposition expts.  
 ST dynamical characterization stationary growth regime diffusion limited electrodeposition **copper**  
 IT Dynamics  
 (characterization of one-dimensional stationary growth regimes in diffusion-limited electrodeposition processes)  
 IT Electrodeposition  
 (dynamical characterization of one-dimensional stationary growth regimes in diffusion-limited electrodeposition processes)  
 IT Anions  
 (effect on morphologies of electrodeposited **copper**)  
 IT Electric potential  
 (evolution of electrolytic cell voltage during electrodeposition of **copper** from **Copper** nitrate soln.)  
 IT Diffusion  
 (of **copper** ions to electrode surface during electrodeposition process)  
 IT Concentration (condition)  
 (of **copper** salt profiles during **copper** electrodeposit growth)  
 IT Interferometry  
 (of electrodeposited **copper** in dynamical characterization of one-dimensional stationary growth regimes in diffusion-limited electrodeposition processes)  
 IT Physicochemical simulation  
 (of one-dimensional stationary growth regimes in diffusion-limited electrodeposition processes)  
 IT 7440-50-8, **Copper**, properties  
 RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)  
 (dynamical characterization of one-dimensional stationary growth regimes in diffusion-limited electrodeposition of)  
 IT 7447-39-4, **Copper** chloride, uses  
 RL: MOA (Modifier or additive use); PRP (Properties); RCT (Reactant); USES (Uses)  
 (electrodeposition of **copper** on **silver** from **Cu(NO<sub>3</sub>)<sub>2</sub>** soln. contg. **CuCl<sub>2</sub>** and on **platinum** from soln. of)  
 IT 142-71-2, **Copper** acetate 3251-23-8  
 RL: PRP (Properties); RCT (Reactant)  
 (electrodeposition of **copper** on **silver** from soln. of)

AN 1998:6111954 INSPEC DN B9901-2210D-052  
 TI Pb-free external lead finishes for electronic components: Tin-bismuth and tin-silver.  
 AU Schetty, R. (LeaRonel Inc., Freeport, NY, USA)  
 SO 2nd 1998 IEMT/IMC Symposium (IEEE Cat. No.98EX225)  
 Tokyo, Japan: Organizing Committee 1998 IEMT/IMC Symposium, 1998. p.380-5  
 of xvii+391 pp. 11 refs.  
 Conference: Tokyo, Japan, 15-17 April 1998  
 Sponsor(s): IEEE CPMT (Components, Packaging, & Manuf. Technol.) Soc.;  
 SHM: Microelectron. Soc.-Japan (IMAPS-Japan)  
 ISBN: 0-7803-5090-1  
 DT Conference Article  
 TC Practical; Experimental  
 CY Japan  
 LA English  
 AB While research and development of both Pb-free solder pastes and Pb-free circuit board coatings has been substantial, to date minimal information has been published regarding Pb-free finishes on the external component leads. To create a truly environmentally safe, Pb-free electronic assembly, it is required that Pb-free materials be used throughout the interconnection. While the replacement of tin-lead by nickel/palladium and nickel/palladium/gold coatings does produce a Pb-free component finish which is being used commercially in certain applications at present, this technology is limited to copper alloy base materials. In Japan, an iron/nickel alloy (Alloy 42) is a very common base material for electronic components, and therefore layering systems based on palladium are not a viable alternative for the majority of electronic components in Japan. An external lead finish composed of a Pb-free solder is required which replaces existing tin-lead. To date, most research on Pb-free solder paste materials has identified two binary alloys of tin, tin-bismuth (Sn-Bi) and tin-silver (Sn-Ag), along with ternary and quaternary alloy variations of these, as the most promising for most electronics assembly operations. External lead finishes which are compatible with tin-bismuth and tin-silver solder pastes are therefore required. This paper introduces Sn-Bi and Sn-Ag electroplating processes for external lead finishing applications which satisfy Pb-free finish requirements for the electronics industry.  
 CC B2210D Printed circuit manufacture; B0170E Production facilities and engineering; B0170G General fabrication techniques; B0170Q Environmental factors; B0520J Deposition from liquid phases  
 CT ASSEMBLING; BISMUTH ALLOYS; ELECTROPLATING; ENVIRONMENTAL FACTORS; METALLISATION; PRINTED CIRCUIT MANUFACTURE; SILVER ALLOYS; SOLDERING; SURFACE TREATMENT; TIN ALLOYS  
 ST Pb-free external lead finishes; electronic components; tin-bismuth lead finish; tin-silver lead finish; Pb-free solder pastes; Pb-free circuit board coatings; Pb-free finishes; external component leads; environmentally safe Pb-free electronic assembly; Pb-free materials; interconnection; nickel/palladium/gold coatings; nickel/palladium coatings; Pb-free component finish; copper alloy base materials; iron/nickel alloy base materials; Alloy 42 base materials; layering systems; external lead finish; Pb-free solder; tin-silver solder pastes; tin-bismuth solder pastes; Sn-Ag electroplating processes; Sn-Bi electroplating processes; external lead finishing; Pb-free finish requirements; electronics industry; SnPb; SnBi; SnAg; Ni-Pd; Ni-Pd-Au; Fe-Ni  
 CHI SnPb int, Pb int, Sn int, SnPb bin, Pb bin, Sn bin; SnBi int, Bi int, Sn int, SnBi bin, Bi bin, Sn bin; SnAg int, Ag int, Sn int, SnAg bin, Ag bin, Sn bin; Ni-Pd int, Ni int, Pd int, Ni el, Pd el; Ni-Pd-Au int, Au int, Ni int, Pd int, Au el, Ni el, Pd el; Fe-Ni int, Fe int, Ni int, Fe el, Ni el  
 ET Pb; Bi\*Sn; Bi sy 2; sy 2; Sn sy 2; Sn-Bi; Ag\*Sn; Ag sy 2; Sn-Ag; Pb\*Sn; Pb sy 2; SnPb; Sn cp; cp; Pb cp; SnBi; Bi cp; SnAg; Ag cp; Ni\*Pd; Ni sy 2; Pd sy 2; Ni-Pd; Au\*Ni\*Pd; Au sy 3; sy 3; Ni sy 3; Pd sy 3; Ni-Pd-Au; Fe\*Ni;

Fe sy 2; Fe-Ni; Sn; Bi; Ag; Ni; Pd; Au; Fe

L141 ANSWER 13 OF 77 METADEX COPYRIGHT 2000 CSA  
 AN 1999(3):58-281 METADEX  
 TI Tin-silver alloy plating from non-cyanide bath.  
 AU Arai, S. (Precision Technology Research Institute of Nagano Prefecture)  
 SO Hyomen Gijutsu (Journal of the Surface Finishing Society of Japan) (Mar. 1998) 49, (3), 230-234, Photomicrographs, Graphs, 26 ref.  
 ISSN: 0915-1869  
 DT Journal  
 CY Japan  
 LA Japanese  
 AB In order to improve solder wetting, investigations are underway for soldering capabilities in low oxygen environment and surface treatment of affected products. In this report as an alternative for lead-free surface treatment tin-silver alloy plating is discussed in particular as pertained to correlation with environmental concerns. Author has considered the pyrophosphoric acid-iodides bath and provides the relevant data with diagrams. During alloy plating when each metal precipitation voltage does approach one another, eutectogenic phenomena becomes easier to witness. In a table the tin-silver alloy plating bath composition that was published by this association is provided, since tin is an amphoteric metal it offers a stable ionized bath environment. The x-ray diffraction patterns for this plating are plotted for various Ag wt.% ratios with Sn-Ag. Bump patterns that are formed in IC chips for improved connection use are shown in an SEM photograph.  
 CC 58 Metallic Coating  
 CT Journal Article; Tin base alloys; Coatings; Alloy plating; Electronic devices; Fabrication; Soldering; Wetting; Silver; Alloying elements; Oxygen; Environment  
 ET Ag; Ag\*Sn; Ag sy 2; sy 2; Sn sy 2; Sn-Ag

L141 ANSWER 14 OF 77 INSPEC COPYRIGHT 2000 IEE  
 AN 1998:5930572 INSPEC DN B9807-2210D-026  
 TI Lead-free solder joint evaluation.  
 AU Romm, D.W. (Texas Instrum. Inc., Sherman, TX, USA); Abbott, D.C.  
 SO Surface Mount Technology (March 1998) vol.12, no.3, p.84, 86, 88. 3 refs.  
 Published by: IHS Publishing Group  
 Price: CCCC 0893-3588/98/\$1.00+.50  
 CODEN: SMTEEL ISSN: 0893-3588  
 SICI: 0893-3588(199803)12:3L.84:LFSJ;1-B  
 DT Journal  
 TC Practical; Experimental  
 CY United States  
 LA English  
 AB In 1989, Texas Instruments introduced a new lead-frame finish for integrated circuits. Comprised of four layers on the **copper** base - an Ni strike, a Pd/Ni strike, an Ni plate and a Pd strike - the last being a 0.075  $\mu$ m layer on the top to protect the underlying, pure Ni layer from oxidation and permitting Pb to be eliminated from the semiconductor manufacturing flow. Serendipitously, cyanide is removed from the lead-frame process by eliminating the **silver** spot previously plated to provide a wire bonding surface, and at the IC assembly/test site, a costly and time-consuming **solder** plating after plastic encapsulation is eliminated. Thus, with palladium-finished ICs, a Pb-free **solder** paste, and without an SnPb coating on the **copper** land patterns, the user can completely eliminate lead from the board mount process and finished PCB assemblies. This article assesses the quality of the **solder** joints produced with this system.  
 CC B2210D Printed circuit manufacture; B0170G General fabrication techniques; B0170J Product packaging; B0170N Reliability; B0170Q Environmental factors  
 CT ASSEMBLING; ENVIRONMENTAL FACTORS; INTEGRATED CIRCUIT PACKAGING; RELIABILITY; SOLDERING; SURFACE MOUNT TECHNOLOGY; SURFACE TREATMENT

ST Pb-free solder joint evaluation; IC lead-frame finish; copper base; Ni strike; Pd/Ni strike; Ni plate; Pd strike; oxidation protection layer; Pb elimination; semiconductor manufacturing flow; cyanide elimination; lead-frame process; silver spot elimination; wire bonding surface; IC assembly/test site; solder plating; plastic encapsulation; palladium-finished ICs; Pb-free solder paste; copper land patterns; board mount process; PCB assemblies; solder joint quality; 0.075 micron; Cu ; Ni-Cu; PdNi-Cu; Pd-Cu; SnPb  
 CHI Cu sur, Cu el; Ni-Cu int, Cu int, Ni int, Cu el, Ni el; PdNi-Cu int, PdNi int, Cu int, Ni int, Pd int, PdNi bin, Ni bin, Pd bin, Cu el; Pd-Cu int, Cu int, Pd int, Cu el, Pd el; SnPb int, Pb int, Sn int, SnPb bin, Pb bin, Sn bin  
 PHP size 7.5E-08 m  
 ET In; Ni; Pd; Pb; Cs\*I; ICs; I cp; cp; Cs cp; Pb\*Sn; Pb sy 2; sy 2; Sn sy 2; SnPb; Sn cp; Pb cp; Cu; Cu\*Ni; Cu sy 2; Ni sy 2; Ni-Cu; Cu\*Ni\*Pd; Cu sy 3; sy 3; Ni sy 3; Pd sy 3; PdNi; Pd cp; Ni cp; PdNi-Cu; Cu\*Pd; Pd sy 2; Pd-Cu; Ni\*Pd; Sn

L141 ANSWER 15 OF 77 COMPENDEX COPYRIGHT 2000 EI  
 AN 1998(18):3960 COMPENDEX  
 TI Bright tin-silver alloy electrodeposition from an organic sulfonate bath containing pyrophosphate, iodide & triethanolamine as chelating agents.  
 AU Kondo, T.; Obata, K.; Takeuchi, T.; Masaki, S.  
 SO Plating and Surface Finishing v 85 n 2 Feb 1998.p 51-55  
 CODEN: PSFMDH ISSN: 0360-3164  
 PY 1998  
 DT Journal  
 TC Experimental  
 LA English  
 AB A new tin-silver alloy plating bath was investigated to obtain a lead-free solderable coating. Bright tin-silver electrodeposits having compositions close to eutectic were obtained from an organic sulfonate bath containing pyrophosphate, iodide and triethanolamine as chelating agents, and an amine-aldehyde reaction product as a brightener. A suitable bath composition was determined and the relationship between silver content in the deposit and bath composition and operating conditions were investigated. Properties of the deposits (i.e., solderability and whisker growth) were also investigated. (Author abstract) 14 Refs.  
 CC 539.3.1 Electroplating; 804.1 Organic Components; 803 Chemical Agents; 813.2 Coating Materials; 546.2 Tin and Alloys; 531.2 Metallography  
 CT \*Electrodeposition; Eutectics; Iodine compounds; Amines; Agents; Coatings; Tin alloys; Composition; Sulfur compounds; Phosphates  
 ST Organic sulfonate bath; Pyrophosphate; Iodide; Triethanolamine; Chelating agents; Solderability; Polarization curve

L141 ANSWER 16 OF 77 HCAPLUS COPYRIGHT 2000 ACS  
 AN 1997:558697 HCAPLUS  
 DN 127:153926  
 TI Surface treatment of a lead frame with a silver plate on a portion of its surface  
 IN Ozaki, Toshinori; Akino, Hisanori; Tomobe, Masakatsu; Yoshida, Kazuyuki; Koizumi, Ryoichi  
 PA Hitachi Cable, Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 8 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01L023-50  
 ICS C25D011-34  
 CC 72-8 (Electrochemistry)  
 Section cross-reference(s): 56, 76  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09181241	A2	19970711	JP 1995-348972	19951221
AB	The sites of die bonding and wire bonding, and specific sites in their vicinity, are subjected to electrochem. treatment in such a way that the degree of oxidn. at those sites are bright-semibright (pH 11-13, KCN concn. 10-200 g/L, -0.2 to +0.8 V, 1-60 s), semibright-nonbright (pH 13-15, KCN concn. 5-100 g/L, +0.8 to 1.8 V, 1-60 s), and completely nonbright (pH 13-15, KOH soln., +0.8 to 1.8 V, 1-60 s). Films which can satisfy the requested mech. strength, wettability for soldering, and recognition of bonding sites can be freely established and selected.				
ST	lead frame surface treatment silver				
	electroplating				
IT	Electroplating (electroplating of silver under different conditions in surface treatment of lead frame)				
IT	Electric conductors (lead frames; electroplating of bright-semibright and semibright-nonbright and completely nonbright silver under different conditions in surface treatment of lead frame)				
IT	7440-22-4, Silver, properties RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process) (electroplating of silver under different conditions in surface treatment of lead frame)				

L141 ANSWER 17 OF 77 WPIDS COPYRIGHT 2000 DERWENT INFORMATION LTD  
 AN 1997-460220 [43] WPIDS  
 DNN N1997-383211 DNC C1997-147045  
 TI Enhancing solderability of surface by immersion plating with silver - and optionally another more noble metal, used in the manufacture of printed circuit boards.  
 DC E13 L03 M13 P55 V04  
 IN FERRIER, D; YAKOBSON, E  
 PA (MCDN) MACDERMID INC  
 CYC 8  
 PI EP 797380 A1 19970924 (199743)\* EN 9p H05K003-24  
 R: BE DE ES FR GB IT  
 JP 10008262 A 19980113 (199812) 6p C23C018-44 <--  
 US 5733599 A 19980331 (199820) 4p B05D005-12  
 US 5935640 A 19990810 (199938) B05D005-12  
 ADT EP 797380 A1 EP 1997-301116 19970220; JP 10008262 A JP 1997-64204  
 19970318; US 5733599 A US 1996-621098 19960322; US 5935640 A Div ex US  
 1996-621098 19960322, US 1997-982980 19971202  
 FDT US 5935640 A Div ex US 5733599  
 PRAI US 1996-621098 19960322; US 1997-982980 19971202  
 REP 2.Jnl.Ref; DE 1690265; GB 1120583; JP 03002379; US 3162512; US 5468515; WO  
 9617974; WO 9617975  
 IC ICM B05D005-12; C23C018-44; H05K003-24  
 ICS B23K001-20; B23K035-00; C22C005-06; C23C018-42; H05K003-34  
 AB EP 797380 A UPAB: 19980209

The solderability of a surface is enhanced by immersion plating silver on the surface and then soldering directly upon the silver plate.

Also claimed are (A) a process for enhancing solderability in which the surface is immersion plated with a first metal more noble than the surface and then with a second metal more noble than the first and (B) a composition and process for immersion plating silver onto a metallic substrate. The composition comprises a soluble source of silver ions, an acid, an optional oxidant and a specified imidazole.

USE - In the fabrication of printed circuit boards (claimed),  
 KATHLEEN FULLER EIC 1700 308-4290

particularly **solder** mask over bare **copper** (SMOBC) boards.

ADVANTAGE - Versatile and low cost method of enhancing **solderability**.

Dwg.0/0

FS CPI EPI GMPI

FA AB; DCN

MC CPI: E07-D09B; E10-A09B5; L03-H04E6; M13-B; M23-A

EPI: V04-R03A

L141 ANSWER 18 OF 77 INSPEC COPYRIGHT 2000 IEE

AN 1998:5959142 INSPEC DN B9808-2210D-017

TI The ideal **solderable copper** protective **silver** coating for PCB.

AU Enomoto, T.; Tsunoda, M. (Alpha Metals Japan, Kanagawa, Japan)

SO 1st 1997 IEMT/IMC Symposium (IEEE Cat. No.97CH36059)

Tokyo, Japan: SHM: Microelectron. Soc, 1997. p.254-7 of xvi+415 pp. 1 refs. Availability: SHM: The Microelectronics Society, 5-24-6 Hongo, Bunkyo-ku, Tokyo 113, Japan

Conference: Tokyo, Japan, 16-18 April 1997

Sponsor(s): IEEE CPMT (Components, Packaging, & Manuf. Technol.) Soc.; SHM: Microelectron. Soc.-Japan

ISBN: 0-7803-4235-6

DT Conference Article

TC Experimental

CY Japan

LA English

AB In recent year, the increasing popularity of ultra fine line technologies has brought into question the physical aspects of physical aspects of pad topography. The pad flatness is essential in ultra fine line assembly. And also, lead free may request not only **solder** but also pad, devices topography and **surface treatment**. So far it has been using any kind of **copper** protective coating for PCB, such as hot air **solder** leveling, organic coating and electroless nickel-gold. But these coating could not solve pad flatness, lead free, cost effective, and **solderability**. We developed for this use immersion new **silver** coating with anti tarnish layer formation.

This simple **silver** plating system give us good

**solderability**, pad flatness and lead free **surface** treatment of PCB. New **silver** coating make the form of a **silver** deposit of between 0.08 0.16  $\mu$ m on **copper**.

Reporting of its **solderability**, tensile strength of **solder** joint, surface insulation resistance and bendability. The anti tarnish layer formation encapsulates the **silver** to such an extent that the **silver** migration is eliminated, and no drop in SIR has been identified after artificial aging. The anti tarnish layer is so thin that it has no detrimental effect on pin testing. And also, topography of the coated **silver** meets the stringent requirements of wire bonding. Inhibited immersion **silver** coating has four independent process. The process is carried out at low temperature without the need for toxic hazardous chemistry.

CC B2210D Printed circuit manufacture

CT COPPER; PRINTED CIRCUIT MANUFACTURE; PROTECTIVE COATINGS;

SILVER; SOLDERING; SURFACE TREATMENT

ST copper protective coating; PCB; ultra fine line technology; pad

topography; lead free surface treatment; pad flatness;

antitarnish layer; **silver** plating; **solderability**;

inhibited immersion **silver** coating; tensile strength; surface

insulation resistance; bendability; encapsulation; SIR; aging; pin

testing; wire bonding; Ag; Cu

CHI Ag el; Cu el

ET In; Ag; Cu

L141 ANSWER 19 OF 77 HCAPLUS COPYRIGHT 2000 ACS

KATHLEEN FULLER EIC 1700 308-4290

AN 1997:780968 HCPLUS  
 DN 128:94552  
 TI A model of oxide layer growth on Ag<sup>+</sup> and Pt<sup>+</sup> ion implanted nickel anode in aqueous alkaline solution  
 AU Tashlykov, I.S.  
 CS a Sverdlova Str., Belorussian State Technological University, 220630 Minsk, 13-, Belarus  
 SO Thin Solid Films (1997), 307(1,2), 106-109  
 CODEN: THSFAP; ISSN: 0040-6090  
 PB Elsevier Science S.A.  
 DT Journal  
 LA English  
 CC 72-2 (Electrochemistry)  
 AB This work studies Ni oxide films growth on Ni implanted with ions of the noble metals Ag and Pt. Polycryst. and single crystal samples of Ni were implanted with high fluences (1 .times. 10<sup>19</sup>-1 .times. 10<sup>21</sup> m<sup>-2</sup>) of 9-50 keV ions. Galvanostatic and potentiostatic polarization techniques were applied to monitor the electrochem. efficiencies of formation of Ni<sub>x</sub>O<sub>1-x</sub> films in aq. KOH soln. (30) at 353 K. The growth rates, thickness and compositional profiles of oxidized Ni layers were examt. by RBS. The anodic oxide film consists of Ni(OH)<sub>2</sub>.xH<sub>2</sub>O (x .gt;req. 1). Anodic oxidn. of Ni occurs due to out-diffusion of Ni atoms through the hydroxide layer. Implanted Ag penetrates partly into the anodic oxide whereas Pt is completely buried beneath the oxide film.  
 ST oxidn silver platinum implanted nickel anode  
 IT Anodes  
     (model of oxide layer growth on Ag<sup>+</sup> and Pt<sup>+</sup> ion-implanted nickel anode in aq. alk. soln.)  
 IT Electrochemical oxidation  
     (of Ag<sup>+</sup> and Pt<sup>+</sup> ion-implanted nickel anode in aq. alk. soln.)  
 IT Out diffusion  
     (of nickel atoms through hydroxide layer during anodic oxidn. of Ag<sup>+</sup> and Pt<sup>+</sup> ion-implanted nickel anode in aq. alk. soln.)  
 IT Ion implantation  
     (out-diffusion of nickel atoms through hydroxide layer during anodic oxidn. of Ag<sup>+</sup> and Pt<sup>+</sup> ion-implanted nickel anode in aq. alk. soln.)  
 IT 7440-02-0, Nickel, uses  
     RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
     (model of oxide layer growth on Ag<sup>+</sup> and Pt<sup>+</sup> ion-implanted nickel anode in aq. alk. soln.)  
 IT 14701-21-4, Silver(1+), uses 20561-56-2, Platinum (1+), uses  
     RL: MOA (Modifier or additive use); USES (Uses)  
     (model of oxide layer growth on Ag<sup>+</sup> and Pt<sup>+</sup> ion-implanted nickel anode in aq. alk. soln.)  
 IT 1313-99-1, Nickel oxide (NiO), processes  
     RL: PEP (Physical, engineering or chemical process); PROC (Process)  
     (model of oxide layer growth on Ag<sup>+</sup> and Pt<sup>+</sup> ion-implanted nickel anode in aq. alk. soln.)  
 IT 36897-37-7, Nickel hydroxide hydrate  
     RL: PEP (Physical, engineering or chemical process); PROC (Process)  
     (out-diffusion of nickel atoms through hydroxide layer during anodic oxidn. of Ag<sup>+</sup> and Pt<sup>+</sup> ion-implanted nickel anode in aq. alk. soln.)

IN Sugiura, Taku; Tamya, Yukihiro; Takahata, Toshinobu  
 PA Sumitomo Metal Mining Co, Japan  
 SO Jpn. Kokai Tokkyo Koho, 4 pp.  
 CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C23C018-31

ICS C23C018-18; C23C018-34; C23C018-40; C23C018-44

CC 76-2 (Electric Phenomena)

Section cross-reference(s): 56

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08253870	A2	19961001	JP 1995-81782	19950314
AB	The title method involves the following steps; dispersing activated powders in a soln. contg. 0.2-1.5-mol/L reducing agent and mixing the soln. into a reducing agent-free electroless plating soln. for 10-120 s. The powders are useful for elec. conducting materials or electromagnetic shielding materials. The powders showed high elec. cond.				
ST	metal electroless plating coating elec conductor; potassium titanate whisker metal electroless plating				
IT	Potassium titanate fibers RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses) (TISMO-N; manuf. of metal-coated powders with high elec. cond. by electroless plating)				
IT	Crystal whiskers Electric conductors Electroless plating (manuf. of metal-coated powders with high elec. cond. by electroless plating)				
IT	7440-02-0, Nickel, processes 7440-05-3, Palladium, processes 7440-22-4, Silver, processes 7440-50-8, Copper, processes RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses) (manuf. of metal-coated powders with high elec. cond. by electroless plating)				
IT	50-00-0, Formaldehyde, uses 7803-57-8, Hydrazine hydrate RL: NUU (Nonbiological use, unclassified); USES (Uses) (reducing agent; manuf. of metal-coated powders with high elec. cond. by electroless plating)				
IT	12673-69-7, Potassium titanate RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses) (whisker; manuf. of metal-coated powders with high elec. cond. by electroless plating)				

L141 ANSWER 21 OF 77 HCAPLUS COPYRIGHT 2000 ACS

AN 1996:209796 HCAPLUS

DN 124:247852

TI Conductor circuits and formation thereof

IN Itabashi, Takeshi; Akaboshi, Haruo; Takahashi, Akio

PA Hitachi Ltd, Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H05K003-10

ICS H05K001-09; H05K003-18; H05K003-24

CC 76-2 (Electric Phenomena)

Section cross-reference(s): 56

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 08018199	A2	19960119	JP 1994-149060	19940630
AB	The circuit has grooves and holes on an insulator filled with the conductor <b>metal</b> (e.g., <b>Cu</b> ) to the level same with the surface of the insulator by electroless plating, and coating of the conductor with an electroless-plated layer which contains a high concn. of substance(s) (e.g., <b>Pb</b> , <b>Hg</b> , <b>Ag</b> , <b>zn</b> , <b>Sn</b> , <b>Fe</b> , <b>co</b> , and/or <b>Ni</b> ) blocking local cathode reaction. The title process comprises electroless plating while stirring the plating soln. contg. the substance(s) blocking local cathode reaction (e.g., to a concn. of 1 .times. 10-6-2 .times. 10-4 mol/L). Deposition is automatically terminated by increase of supply of the substance when the <b>metal</b> surface deposited reaches the level same with the surface of the insulator.			
ST	circuit electroless plating; electroless plating local cathode reaction blocking			
IT	Electric circuits (filling of grooves and holes on insulators by electroless plating with blocking of local cathode reaction)			
IT	Coating process (electroless, for prepn. of <b>metal</b> circuits from solns. contg. local cathode reaction-blocking substances)			
IT	7439-89-6, Iron, uses 7439-92-1, Lead, uses 7439-97-6, Mercury, uses 7440-02-0, Nickel, uses 7440-22-4, <b>Silver</b> , uses 7440-31-5, Tin, uses 7440-48-4, Cobalt, uses 7440-66-6, Zinc, uses RL: <b>MOA (Modifier or additive use)</b> ; <b>USES (Uses)</b> (for blocking of local cathode reaction in electroless plating of <b>metal</b> circuits)			
IT	7440-50-8P, <b>Copper</b> , processes RL: <b>DEV (Device component use)</b> ; <b>PEP (Physical, engineering or chemical process)</b> ; <b>SPN (Synthetic preparation)</b> ; <b>PREP (Preparation)</b> ; <b>PROC (Process)</b> ; <b>USES (Uses)</b> (for prepn. of circuits with filling of grooves and holes in insulators by electroless plating)			

L141 ANSWER 22 OF 77 HCPLUS COPYRIGHT 2000 ACS

AN 1997:130162 HCPLUS

DN 126:136892

TI Conferring a metallic patina aspect on a piece of plastic material

IN Bart, Jean Michel Rene Fernand; Moulin, Janick Jean Yves

PA Ams Europe, Fr.

SO Fr. Demande, 18 pp.

CODEN: FRXXBL

DT Patent

LA French

IC ICM B44C001-00

ICS C25D005-56; C25D005-48; C23C028-00; B05D003-12

CC 72-8 (**Electrochemistry**)

Section cross-reference(s): 38, 56

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI FR 2735075	A1	19961213	FR 1995-6717	19950607
AB	An old <b>silver</b> or gold aspect can be conferred on a piece of plastic (e.g. ABS copolymer, mixts. of polycarbonates and ABS copolymer, polypropylenes (charged with metal, wood, glass or ceramic particles), acetal resins, and thermosetting plastics) by the following procedure. First a layer of Ni is deposited on a piece of metalizable plastic material, then the Ni-electroplated piece is placed in contact with a soln. (e.g. contg. Na thiosulfate, Pb or Cu sulfate and K tartrate or a Ni salt, Zn sulfate and a fluoride-ion based compd. such as Na fluoroborate), and finally the surface of the colored piece is degraded by			
FR 2735075	B1	19970829		

KATHLEEN FULLER EIC 1700 308-4290

ST abrasion using appropriate abrasive agents.

ST metallic patina application plastic material piece; **silver** gold patina aspect plastic material; nickel electroplated ABS copolymer patina aspect

IT Polycarbonates, uses  
 RL: PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)  
 (conferring metallic patina aspect on piece of ABS copolymer + polycarbonates by plating with nickel and then chem. coloring and abrading the piece)

IT Electroplating  
 (conferring metallic patina aspect on piece of thermosetting polymers by electroplating with nickel and copper)

IT Abrasion  
 (conferring metallic patina aspect on piece of thermosetting polymers by electroplating with nickel followed by electrolytic coloring and abrasion)

IT Electrolytic coloring  
 (conferring metallic patina aspect on piece of thermosetting polymers by plating with nickel and then chem. coloring and abrading the piece)

IT Thermosetting plastics  
 RL: PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PRP (Properties); PROC (Process); USES (Uses)  
 (conferring metallic patina aspect on piece of thermosetting polymers by plating with nickel and then chem. coloring and abrading the piece)

IT 9003-56-9, ABS copolymer  
 RL: PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)  
 (conferring metallic patina aspect on piece of ABS copolymer material by plating with nickel and then chem. coloring and abrading the piece)

IT 9003-07-0, Polypropylene  
 RL: PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)  
 (conferring metallic patina aspect on piece of charged polypropylenes by plating with nickel and then chem. coloring and abrading the piece)

IT 7440-02-0P, Nickel, uses  
 RL: PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)  
 (conferring metallic patina aspect on piece of plastic material by plating with nickel and then chem. coloring and abrading the piece)

IT 7440-50-8P, Copper, uses  
 RL: PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)  
 (conferring metallic patina aspect on piece of thermosetting polymers by plating with nickel and copper)

IT 7733-02-0, Zinc sulfate 7772-98-7, Sodium thiosulfate 13755-29-8, Sodium fluoroborate 15347-57-6, Lead acetate 40968-90-9, Potassium tartrate  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (conferring metallic patina aspect on piece of thermosetting polymers by plating with nickel and then chem. coloring in soln. contg.)

IT 74-94-2, Dimethylamine borane 1336-21-6, Ammonium hydroxide 7722-88-5  
 10043-35-3, Boric acid, uses  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (conferring metallic patina aspect on piece of thermosetting polymers by plating with nickel from bath contg.)

AN 1996:11534 HCAPLUS  
 DN 124:133038  
 TI Electrode material paste, chip electronic part using it, and  
 surface treatment of electrode layer  
 IN Tsuda, Shinji  
 PA Rohm Kk, Japan  
 SO Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01B001-20  
 ICS C08K003-00; C08L101-00; H01B005-14; H01G004-252; H01R004-02  
 ICA H01G004-008  
 CC 76-2 (Electric Phenomena)  
 Section cross-reference(s): 38, 56  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 07282621	A2	19951027	JP 1994-68236	19940406
AB	The paste consists of conductive powders, a thermosetting resin, an acid-sol. resin, and a solvent. The electronic part has an electrode layer, which is formed by applying the paste on a substrate, hardening the paste, and optionally surface treatment with an acidic soln. The electrode layer shows good soldering without a plating layer. The electrode paste is applicable for a chip electronic part such as a resistor, a capacitor, and an oscillator.				
ST	chip electronic part electrode paste; conductive paste electrode electronic part				
IT	Epoxy resins, processes Polysulfones, processes RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses) (binder; conductive pastes for electrode layers of chip electronic parts having good sinterability)				
IT	Electric capacitors Electric resistors Oscillators and Resonators (conductive pastes for electrode layers of chip electronic parts having good sinterability)				
IT	25339-57-5, Butadiene RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses) (binder; conductive pastes for electrode layers of chip electronic parts having good sinterability)				
IT	7664-93-9, Sulfuric acid, uses RL: NUU (Nonbiological use, unclassified); USES (Uses) (conductive pastes for electrode layers of chip electronic parts having good sinterability)				
IT	7440-02-0, Nickel, uses 7440-06-4, Platinum, uses 7440-22-4, Silver, uses 7440-57-5, Gold, uses RL: DEV (Device component use); USES (Uses) (electrode; conductive pastes for electrode layers of chip electronic parts having good sinterability)				

L141 ANSWER 24 OF 77 HCAPLUS COPYRIGHT 2000 ACS  
 AN 1995:856351 HCAPLUS  
 DN 123:299962  
 TI Gold plating solution containing complex of linear  
 tetramine compound and trivalent gold and its plating method  
 IN Narishima, Ryoichi; Yokono, Ataru; Kimura, Eiichi; Koike, Tooru  
 PA Nippon Denkai Kk, Japan  
 SO Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DT Patent

LA Japanese  
 IC ICM C25D003-48  
 ICA H05K003-18  
 CC 72-8 (Electrochemistry)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 07166392	A2	19950627	JP 1993-342019	19931214
AB	The title plating soln. contains a complex of trivalent Ag and a linear tetramine compd., which may be N,N'-bis(2-aminoethyl)-1,3-propanediamine. The method giving Ag film pptd. on a metal is composed of impregnating a metal which can be oxidized at an elec. potential lower than the redn. potential of the Ag complex to Ag to the soln. The soln. may contain a chelating agent which coordinates the complex, a brightener, a wetting agent, a pH buffer, and a pH treating agent. The cyanide compd.-free method offers safety.				
ST	electroplating soln tetramine gold complex; aminoethylpropanediamine gold complex electroplating soln; gold electroplating bath tetramine complex safety				
IT	Electrodeposition and Electroplating (Ag electroplating bath contg. complex of trivalent Ag and linear tetramine compd. and plating method using the bath)				
IT	7440-57-5P, Gold, processes RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process) (Ag electroplating bath contg. complex of trivalent Ag and linear tetramine compd. and plating method using the bath)				
IT	169170-20-1P RL: PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses) (Ag electroplating bath contg. complex of trivalent Ag and linear tetramine compd. and plating method using the bath)				
IT	9002-92-0, Polyethylene glycol lauryl ether 25322-68-3, Polyethylene glycol RL: MOA (Modifier or additive use); USES (Uses) (brightener; Ag electroplating bath contg. complex of trivalent Ag and linear tetramine compd. and plating method using the bath)				
IT	67-43-6, Diethylenetriamine pentaacetic acid 139-33-3, Ethylenediaminetetraacetic acid disodium salt 7447-40-7, Potassium chloride, uses RL: MOA (Modifier or additive use); USES (Uses) (chelating agent; Ag electroplating bath contg. complex of trivalent Ag and linear tetramine compd. and plating method using the bath)				
IT	122-87-2, Glycin RL: MOA (Modifier or additive use); USES (Uses) (pH buffer; Ag electroplating bath contg. complex of trivalent Ag and linear tetramine compd. and plating method using the bath)				
IT	1310-73-2, Sodium hydroxide, uses 7601-90-3, Perchloric acid, uses 7647-01-0, Hydrochloric acid, uses 7664-93-9, Sulfuric acid, uses RL: MOA (Modifier or additive use); USES (Uses) (pH treating agent; Ag electroplating bath contg. complex of trivalent Ag and linear tetramine compd. and plating method using the bath)				
IT	151-21-3, Sodium laurylsulfate, uses 497-19-8, Sodium carbonate, uses 877-24-7, Potassium hydrogen phthalate 1303-96-4, Borax 2386-53-0, Sodium dodecylsulfonate				

RL: MOA (Modifier or additive use); USES (Uses)  
 (wetting agent; Ag electroplating bath contg. complex of  
 trivalent Ag and linear tetramine compd. and plating method  
 using the bath)

L141 ANSWER 25 OF 77 COMPENDEX COPYRIGHT 2000 EI  
 AN 1996(4):574 COMPENDEX  
 TI Application of frequency response analysis to the determination of  
 cathodic discharge mechanism during silver electroplating.  
 AU Ashiru, O.A. (King Fahd Univ of Petroleum and Minerals, Dhahran, Saudi  
 Arabia); Farr, J.P.G.  
 SO Journal of the Electrochemical Society v 142 n 11 Nov 1995.p 3729-3734  
 CODEN: JESOAN ISSN: 0013-4651  
 PY 1995  
 DT Journal  
 TC Application; Experimental  
 LA English  
 AB The ac impedance data generated from the frequency response analysis  
 technique were used to establish the mechanism of silver electroplating  
 from the industrial cyanide plating bath. The deposition process involves  
 parallel and concurrent charge-transfer reactions from more than one  
 silver complex. Depending on the cyanide concentration in the  
 silver plating bath, the electrode reaction  
 seems to proceed mostly through one of the silver species/complexes: AgCN,  
 Ag(CN)2, or Ag(CN)32 minus, which are in equilibrium with each other. The  
 discharge of Ag(CN)2 minus complex appears the predominant process,  
 especially for bath concentrations in the range of commercial silver  
 cyanide plating systems. The complex plane ac impedance diagrams of the  
 plating system, at steady state, consist of two capacitive loops at the  
 lower frequencies, features are a manifestation of the surface  
 adsorption and coverage processes by specific intermediate species like  
 cyanide and carbonate ions in the plating bath. (Author abstract) 23 Refs.  
 CC 539.3 Metal Plating; 539.3.1 Electroplating; 701.1 Electricity: Basic  
 Concepts and Phenomena; 802.2 Chemical Reactions; 804.2 Inorganic  
 Components; 802.3 Chemical Operations  
 CT \*Silver plating; Adsorption; Electric currents; Charge transfer; Cyanides;  
 Deposition; Carbonates; Concentration (process); Electroplating; Frequency  
 response  
 ST Rotating disk electrode; Silver electroplating; Saturated calomel  
 electrode; Silver cyanide plating systems; High frequency spectrum;  
 Cathodic discharge mechanism; Electrode reactions; Solartron frequency  
 response analyzer  
 ET C\*Ag\*N; AgCN; Ag cp; cp; C cp; N cp; Ag(CN)2; Ag(CN)3; Ag(CN)32 ; Ag(CN)2

L141 ANSWER 26 OF 77 HCAPLUS COPYRIGHT 2000 ACS  
 AN 1995:676212 HCAPLUS  
 DN 123:181746  
 TI Behavior of brighteners in cyanide silver plating  
 solution  
 AU Jiang, Guifeng; Guo, Zhanhe  
 CS Dep. of Chemistry, Fudan Univ., Shanghai, 200433, Peop. Rep. China  
 SO Diandu Yu Huanbao (1995), 15(2), 5-7  
 CODEN: DYHUEU; ISSN: 1000-4742  
 DT Journal  
 LA Chinese  
 CC 72-8 (Electrochemistry)  
 AB Linear potential scanning, SEM, Auger electron spectroscopy, and x-ray  
 diffraction were used to study the effect of brightener on the grain size  
 of Ag electroplate, crystal face orientation, and impurities.  
 It was found that FB-1 brightener decreased the polarization in the  
 cathodic process, reduced the edges and corners of the crystals, and  
 increased the leveling property. FB-2 brightener increased the cathodic  
 polarization and made the crystals fine. The combined use of the 2  
 brighteners made the crystals fine, increased the leveling property,

generated a strong preferred orientation, and made the electroplate as bright as a mirror.

ST brightener behavior cyanide **silver** electroplating soln  
; FB1 brightener cyanide **silver** electroplating soln;  
FB2 brightener cyanide **silver** electroplating soln

IT Electrodeposition and Electroplating  
(behavior of FB-1 and FB-2 brighteners in cyanide **silver** plating soln.)

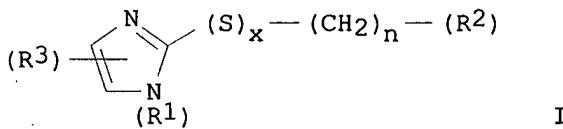
IT Electrolytic polarization  
(cathodic, effect of FB-1 and FB-2 brighteners on cathodic polarization in electroplating of **silver** from cyanide baths)

IT 164325-47-7, FB 2 167397-43-5, FB 1 (brightener)  
RL: MOA (Modifier or additive use); USES (Uses)  
(behavior of FB-1 and FB-2 brighteners in cyanide **silver** plating soln.)

IT 151-50-8, Potassium cyanide  
RL: NUU (Nonbiological use, unclassified); USES (Uses)  
(behavior of FB-1 and FB-2 brighteners in cyanide **silver** plating soln.)

IT 7440-22-4, **Silver**, processes  
RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(behavior of FB-1 and FB-2 brighteners in cyanide **silver** plating soln.)

L141 ANSWER 27 OF 77 HCAPLUS COPYRIGHT 2000 ACS DUPLICATE 1  
 AN 1995:632092 HCAPLUS  
 DN 123:72662  
 TI Protective coating materials on electroconductive **metals** such  
     **solders, electroless-plated solders,**  
     **Ag, Ni, Zn, Cu, and Cu alloys.**  
 IN Yamaguchi, Hideaki; Uo, Masaki; Kato, Kazuhiko; Matsumoto, Kichiji  
 PA Murata K. K., Japan  
 SO Jpn. Kokai Tokkyo Koho, 13 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM C23F011-00  
     ICS C23C022-68; H05K003-28  
 CC 76-14 (**Electric Phenomena**)  
     Section cross-reference(s): 28, 56  
 FAN.CNT 1  
 PATENT NO.      KIND      DATE      APPLICATION NO.      DATE  
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 PI JP 06299375      A2      19941025      JP 1993-354759      19931224  
 PRAI JP 1993-67284      19930218  
 OS MARPAT 123:72662  
 GI



AB The aq. coating solns. contain **imidazole** derivs. I (R1 = H, alkyl, phenylalkyl, allyl; R2 = alkyl, phenylalkyl, subst. cycloaliph. derivs., subst. **imidazole**; R3 = H, sulfonyl, alkyl, Ph, halo; n = 0-17; x = 0-1). The solns. provide the surface of conductive metals with resistance against moisture, chems., heat, and

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corrosion.

ST **imidazole** deriv aq protecting coating soln; conductor metal protective soln **imidazole** deriv

IT Corrosion inhibitors  
(aq. soln. contg. **imidazole** derivs. for)

IT Coating materials  
(aq. soln. contg. **imidazole** derivs. for  
electroconductive metals)

IT Corrosion prevention  
(for elec. conductive metals)

IT **Solders**  
(protective coating materials contg. **imidazole** derivs. for)

IT **Copper** alloy, base  
RL: NUU (Nonbiological use, unclassified); USES (Uses)  
(elec. conductors; protective coating materials for)

IT 7440-02-0, Nickel, uses 7440-22-4, **Silver**, uses 7440-50-8,  
**Copper**, uses 7440-66-6, Zinc, uses  
RL: NUU (Nonbiological use, unclassified); USES (Uses)  
(elec. conductors; protective coating materials for)

IT 6638-46-6, 1H-**Imidazole**, 2-(1-Ethylpropyl)- 13717-42-5  
13752-21-1 14085-43-9, 2-Cyclohexylimidazole 14967-26-1  
17303-07-0 32718-53-9, 2-Tolylimidazole 33214-19-6, 1H-  
**Imidazole**, 2-pentyl- 50995-95-4, 2-Propylimidazole  
52819-56-4, 2-Nonylimidazole 56750-07-3, 2-  
**Heptylimidazole** 61491-93-8, 1H-**Imidazole**,  
2-(1-methylpentyl)- 84694-97-3 85694-87-7 91695-98-6 92437-07-5  
163035-57-2 163035-58-3, 1H-**Imidazole**, 2-(1-Ethylpentyl)-  
163035-60-7 163035-61-8 163035-62-9 163035-63-0 163035-64-1  
164062-66-2 164062-67-3 164062-68-4 164062-69-5 164062-70-8  
164062-71-9 164062-72-0 164062-73-1 164062-74-2 164062-75-3  
164062-76-4 164062-77-5 164062-78-6 164062-79-7 164062-80-0  
164062-81-1 164062-82-2 164062-83-3 164062-84-4 164062-85-5  
164062-86-6 164062-87-7 164062-88-8 164062-89-9 164062-90-2  
164062-91-3 164062-92-4 164062-93-5 164062-94-6 164062-95-7  
164062-96-8 164062-97-9 164062-98-0 164062-99-1 164063-00-7  
164063-01-8 164063-02-9 164063-03-0 164063-04-1 164063-05-2  
164063-06-3 164063-07-4 164063-08-5 164063-09-6 164063-10-9  
164063-11-0 164063-12-1 164063-13-2 164063-14-3 164063-15-4  
164063-16-5 164063-17-6 164063-18-7 164063-19-8 164063-20-1  
164063-21-2 164063-22-3 164063-23-4 164063-24-5 164063-25-6  
164672-28-0, 2-Xylylmethylimidazole 164672-29-1 164672-30-4  
164672-31-5 164672-32-6 164672-33-7 164672-34-8  
RL: PRP (Properties)  
(in aq. protective solns. for elec. conductive metals)

L141 ANSWER 28 OF 77 HCAPLUS COPYRIGHT 2000 ACS DUPLICATE 2

AN 1995:623360 HCAPLUS

DN 123:215912

TI Protective coating materials on electroconductive metals such as  
**solders**, **electroless-plated solders**,  
**silver**, **nickel**, **zinc**, **copper**, and **copper**  
alloys

IN Yamaguchi, Hideaki; Uo, Masaki; Kato, Kazuhiko; Matsumoto, Kichiji

PA Murata K. K., Japan

SO Jpn. Kokai Tokkyo Koho, 12 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C23F011-00

ICS C23C022-68; H05K003-28

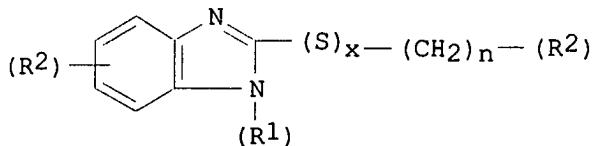
CC 76-14 (**Electric Phenomena**)

Section cross-reference(s): 28, 56

FAN.CNT 1

PATENT NO. KIND DATE APPLICATION NO. DATE  
KATHLEEN FULLER EIC 1700 308-4290

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 PI JP 06299374 A2 19941025 JP 1993-354758 19931224  
 PRAI JP 1993-67283 19930218  
 JP 1993-67285 19930218  
 OS MARPAT 123:215912  
 GI



AB The aq. coating solns. contain **benzimidazole** derivs. I (R1 = H, alkyl, phenylalkyl, allyl; R2 = alkyl, phenylalkyl, substd. cycloaliph. derivs., substd. **benzimidazole**; R3 = H, sulfonyl, alkyl, halo; n = 0-17; x = 0-1). The solns. provide the surface of conductive metals with resistance against moisture, chems., heat, corrosion, and deterioration of **solder** wettability and spreading property.

ST **benzimidazole** deriv aq protecting coating soln; conductor metal protective soln **benzimidazole** deriv

IT Corrosion inhibitors  
 (aq. soln. contg. **benzimidazole** derivs. for)

IT Coating materials  
 (aq. soln. contg. **benzimidazole** derivs. for electroconductive metals)

IT Corrosion prevention  
 (for elec. conductive metals)

IT **Solders**  
 (protective coating materials contg. **benzimidazole** derivs. for)

IT **Copper** alloy, base  
 RL: NUU (Nonbiological use, unclassified); USES (Uses)  
 (elec. conductors; protective coating materials for)

IT 7440-02-0, Nickel, uses 7440-22-4, **Silver**, uses 7440-50-8,  
**Copper**, uses 7440-66-6, Zinc, uses  
 RL: NUU (Nonbiological use, unclassified); USES (Uses)  
 (elec. conductors; protective coating materials for)

IT 1085-19-4 2562-77-8 2562-78-9 5315-67-3 5465-29-2, 2-  
**Propylbenzimidazole** 5805-30-1 5851-46-7, 2-  
**Pentylbenzimidazole** 5851-47-8 5851-49-0, 2-  
**Heptylbenzimidazole** 5851-50-3, 2-**Nonylbenzimidazole**  
 6637-38-3 13786-53-3 36947-70-3, 2-**Cyclohexylbenzimidazole**  
 40608-87-5 55901-21-8, 2-**Propylthiocbenzimidazole** 67273-55-6  
 93155-81-8 99206-53-8 102549-93-9 143966-19-2 143966-20-5  
 144991-20-8 144991-21-9 146350-91-6, 2-**Cyclopentylmethylbenzimidazole** 146350-97-2 150649-20-0 152076-41-0 154050-26-7  
 154050-28-9 154161-48-5 156041-00-8 164124-21-4 164124-22-5  
 164124-23-6 164124-24-7 164124-25-8 167483-27-4 167483-28-5  
 167483-29-6 167483-30-9 167483-31-0 167483-32-1 167483-33-2  
 167483-34-3 167483-35-4 167483-36-5 167483-37-6 167483-38-7  
 167483-39-8 167483-40-1 167483-41-2 167483-42-3 167483-43-4  
 167483-44-5 167483-45-6 167483-46-7 167483-47-8 167483-48-9  
 167483-49-0 167483-50-3 167483-51-4 167483-52-5 167483-53-6  
 167483-54-7 167483-55-8 167483-56-9 167483-57-0 167483-58-1  
 167483-59-2 167483-60-5 167483-61-6 167483-62-7 167483-63-8  
 167483-64-9 167483-65-0 167483-66-1 167483-67-2 167483-68-3  
 167483-69-4 167483-70-7 167483-71-8 167483-72-9  
 RL: PRP (Properties)  
 (in aq. protective solns. for elec. conductive metals)

KATHLEEN FULLER EIC 1700 308-4290

L141 ANSWER 29 OF 77 COMPENDEX COPYRIGHT 2000 EI  
 AN 1995(17):5280 COMPENDEX  
 TI Relation between impurities (Au plating) and joints quality.  
 AU Sasaki, Hideaki (Hitachi Ltd, Jpn); Kazui, Shinichi; Shibata, Tatsumi; Morinari, Ryosuke  
 SO Yosetsu Gakkai Ronbunshu/Quarterly Journal of the Japan Welding Society v 12 n 4 Nov 1994.p 588-590  
 CODEN: YGRODU ISSN: 0288-4771  
 PY 1994  
 DT Journal  
 TC Experimental  
 LA English; Japanese  
 AB Parallel gap resistance welding of Ag plated 0.18 mm diameter oxygen free copper wires to Au plus Ni plated of Printed circuit boards (P/B) was investigated (concerning Au plating). The results are summarized as follows. (1) Au plating bath for Good Micro Welding is composed Cobaltion 0.35-3 gf/l left bracket 5.9-51 mol/m3 right bracket and Nickelion 0.02-0.5 gf/l left bracket 0.34-8.5 mol/m3 right bracket, after Au plate it's composition of Co 0.2-3% and Ni 0.4-2% except Au: (2) Cobalt content and Nickel content beyond the allowable limit are Bad Welding for Au plating, they cause Blow hole in the weld fillet and decrease weld strength. (Author abstract) 2 Refs.  
 CC 547.1 Precious Metals; 539.3 Metal Plating; 538.2.1 Welding Processes; 549.3 Others (including Bismuth, Boron, Cadmium, Cobalt, Mercury, Niobium, Selenium, Silicon, Tellurium and Zirconium); 548.1 Nickel; 715 Electronic Equipment, General Purpose and Industrial  
 CT \*Silver plating; Impurities; Cobalt; Nickel; Printed circuit boards; Welds; Strength of materials; Resistance welding  
 ST Micro joints; Parallel gap resistance welding; Silver plating bath  
 ET Ag; Au; Ni; P; Co

L141 ANSWER 30 OF 77 COMPENDEX COPYRIGHT 2000 EI  
 AN 1994(31):3531 COMPENDEX  
 TI Electrolytic composite plating as a method of left bracket 90Sr right bracket strontium fixing for the preparation of radiation sources.  
 AU Mielcarski, Mieczyslaw (Radioisotope Cent, Otwock-Swierk, Pol); Poninski, Marek; Lorens, Urszula  
 SO Applied Radiation and Isotopes v 45 n 4 Apr 1994.p 429-431  
 CODEN: ARISEF ISSN: 0969-8043  
 PY 1994  
 DT Journal  
 TC Application; Experimental  
 LA English  
 AB A method for left bracket 90Sr right bracket strontium codeposition with precious metals on the cathodic substrate was examined. left bracket 90Sr right bracket strontium carbonate was used as an insoluble component of the plating bath. Gold and silver were applied as matrix metals. The influence of current density, solid phase concentration and suspension ageing was determined. The particle size distribution in fresh and aged suspension was measured. From the experiments performed it follows, that up to few hundreds MBq of left bracket 90Sr right bracket strontium can be fixed on 1 cm<sup>2</sup> of cathodic surface. (Author abstract) 4 Refs.  
 CC 622.1.1 Radioisotopes; 547.2 Rare Earth Metals; 802.3 Chemical Operations; 801.4.1 Electrochemistry; 547.1 Precious Metals; 804.2 Inorganic Components  
 CT \*Radioisotopes; Composition effects; Gold plating; Silver plating; Cathodes; Suspensions (fluids); Aging of materials; Particle size analysis; Strontium; Electrodeposition  
 ST Codeposition; Radiation sources  
 ET Sr; 90Sr; is; Sr is

L141 ANSWER 31 OF 77 METADEX COPYRIGHT 2000 CSA  
 AN 1994(11):32-485 METADEX  
 TI Characterization and Reliability of Ti/Ni/Au, Ti/Ni/Ag and Ti/Ni Back-Side Metallizations in the Die-Bonding of Power Electronic Devices.  
 AU Scandurra, A. (Consorzio Catania Ricerche); Porto, A. (Co.Ri.M.Me.); Mameli, L. (Co.Ri.M.Me.); Viscuso, O. (Co.Ri.M.Me.); Del Bo, V. (ST Microelectronics); Pignataro, S. (Universita di Catania)  
 SO Surf. Interface Anal. (July 1994) 22, (1-12), 353-357, Spectra.\$R17 ref  
 Accession Number: 19(94):1--2-06  
 Conference: ECASIA 93: European Conference on Applications of Surface and Interface Analysis, Catania, Italy, 4-8 Oct. 1993  
 ISSN: 0142-2421  
 DT Conference Article  
 LA English  
 AB The surface compositions of three different back-side metals: Ti/Ni/Au 0.1/0.4/0.1  $\mu$ m, Ti/Ni/Ag 0.1/0.4/0.1 and 0.1/0.4/2  $\mu$ m and Ti/Ni 0.1/0.4  $\mu$ m after thermal treatment at 180 deg C in air were investigated by means of XPS technique. In the Ti/Ni/Au metal the nickel diffusion through the gold layer was observed, while in the Ti/Ni/Ag metal Ni was not found on the Ag surface. Ti/Ni/Ag was found to be sensitive to contamination from elements such as sulphur and chlorine found on the Ag surface after thermal treatment, while Ti/Ni metal is sensitive to oxidation. NiO, Ni(OH)2, NiOOH and Ni2O3 species were found on the Ni as deposited surface. The surface compositions were correlated to their wetting property using the Pb88-Sn10-Ag2 and Pb95.5-Sn2-Ag2.5 wt.% soft solder alloys. The wetting was studied measuring the contact angle between the surface and the drop of molten solders.  
 CC 32 Physical Properties  
 CT Conference Paper; Silicon: Coating; Multilayers: Coatings; Titanium: Composite materials; Nickel: Composite materials; Precious metals: Composite materials; Electronic devices; Surface chemistry; Wetting; Metallizing  
 ET Ti; Ni; Ag; Ni\*O; NiO; Ni cp; cp; O cp; H\*Ni\*O; Ni(OH)2; H cp; NiOOH; Ni2O3; Pb; Sn

L141 ANSWER 32 OF 77 HCPLUS COPYRIGHT 2000 ACS  
 AN 1994:610666 HCPLUS  
 DN 121:210666  
 TI Wettability of metallic glass alloys by two tin-based solders  
 AU Vianco, P. T.; Hosking, F. M.; Rejent, J. A.  
 CS Center for Solder Science and Technology, Sandia National Laboratories, Albuquerque, NM, USA  
 SO Weld. Res. (Miami) (1994), (July, Suppl.), 153/S-163/S  
 CODEN: WERSA3; ISSN: 0096-7629  
 DT Journal  
 LA English  
 CC 56-9 (Nonferrous Metals and Alloys)  
 AB The wettability was analyzed for Sn-5%Sb and Sn-3.5%Ag solders on rapidly solidified ribbons of Fe-3B-5%Si, Co-4Fe-1Ni-4Mo-3B-7%Si, and Co-5Fe-1Ni-3B-9%Si by the meniscometer/wetting balance technique. Two org. acid fluxes and an inorg. acid flux were evaluated. The substrate surfaces received only a solvent degreasing treatment. Sn-3.5%Ag and Sn-5%Sb solders exhibited fair-to-good wetting with contact angles of 32-62.degree. and 25-60.degree., resp. The contact angle values were similar when the two org. acid fluxes were used and slightly lower when the inorg. acid soln. was used. Although the surface morphol. was different on the two faces of the ribbons, the contact angles of either surface for each ribbon were similar. The quality of the solder film remaining on the samples was largely dependent upon the particular solder-flux-substrate system with the exception of the inorg. flux for which dewetting was always obsd. The solder-flux interfacial tension values depended upon the flux and

**solder** alloy. Thermal annealing of the **metallic** glass caused a deterioration in wettability. Undetected changes to the thickness of the native surface oxide layer, or the thermally relaxed structure resulting from the heat treatment, were likely sources of the increased contact angle.

ST amorphous alloy wettability **tin solder**; antimony tin wettability amorphous alloy; **silver** tin wettability amorphous alloy; iron alloy **tin solder** wettability; cobalt alloy **tin solder** wettability

IT **Metallic** glasses  
RL: PRP (Properties)  
(iron alloy and cobalt alloys; wettability of **metallic** glass alloys by two tin-based **solders**)

IT Wettability  
(wettability of **metallic** glass alloys by two tin-based **solders**)

IT 12641-95-1, Antimony 5, tin 95 50951-31-0, **Silver** 3.5, tin 96  
87140-77-0, Boron 3, iron 92, silicon 5 158201-96-8 158201-97-9  
RL: PRP (Properties)  
(wettability of **metallic** glass alloys by two tin-based **solders**)

IT 7732-18-5  
RL: PRP (Properties)  
(wettability, wettability of **metallic** glass alloys by two tin-based **solders**)

L141 ANSWER 33 OF 77 WPIDS COPYRIGHT 2000 DERWENT INFORMATION LTD  
AN 1993-097013 [12] WPIDS  
DNN N1993-073871 DNC C1993-043098  
TI Mfg. members coated with had thin films, used for cutting tools - by coating **copper** and/or **silver** -contg. layer on ceramic substrate and hard thin film material, then adhering the two coated surfaces by heating.

DC L02 M13 P56  
PA (KOBM) KOBE STEEL LTD  
CYC 1  
PI JP 05039582 A 19930219 (199312)\* 4p C23C028-00 <--  
ADT JP 05039582 A JP 1991-216314 19910801  
PRAI JP 1991-216314 19910801  
IC ICM C23C028-00  
ICS B23P015-28; C23C014-06; C23C016-26;  
C23C026-00; C30B025-04  
AB JP 05039582 A UPAB: 19931122  
The process comprises depositing a thin film of a hard material on a metallic or a ceramic substrate. Firstly, a coating layer contg. **Cu** and/or **Ag** is formed on the surfaces of the substrate and the hard thin film. Then, the coated surface of the substrate is adhered with the coated surface of the thin film by heat treating them at a temp. higher than the m.pt. of the coating layer.  
USE/ADVANTAGE - Provides tools coated with thin diamond films without using a **soldering** process.  
In an example, a 10 micron thin film of diamond was deposited on a Si substrate by hot filament CVD process. The whole substrate was dipped in conc. alkali soln. to dissolve the Si substrate to obtain a diamond thin film. A 1 micron **Ag-Cu** solid soln. layer was formed on the resulting thin film by ion plating, and adhered to a WC end mill on the surface of which a 1 micron **Ag-Cu** solid soln. layer as above was formed

Dwg. 0/0  
FS CPI GMPI  
FA AB  
MC CPI: L02-F05; M13-E02; M13-G01

L141 ANSWER 34 OF 77 HCAPLUS COPYRIGHT 2000 ACS  
KATHLEEN FULLER EIC 1700 308-4290

AN 1993:156811 HCAPLUS  
 DN 118:156811  
 TI Preparation of partly **silver-plated** alloys  
 IN Bando, Yoshinori; Ozaki, Toshinori; Mizuno, Masahiro  
 PA Hitachi Cable, Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 3 pp.

CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM C25F005-00  
 CC 72-7 (**Electrochemistry**)  
 Section cross-reference(s): 56

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 04371600	A2	19921224	JP 1991-150492	19910621
AB	In the electrolytic stripping of the unnecessary Ag of Ag-plated Cu alloys by immersing in an electrolyte soln. contg. <b>succinimide</b> , after the stripping the alloy is subjected to acid washing to remove the <b>succinimide</b> adsorbent or other adhered adsorbents. A soln . contg. .gtoreq.0.01-20% H <sub>2</sub> SO <sub>4</sub> is used for the acid washing. The corrosion, color change, and decrease of the wettability of <b>solders</b> can be prevented.				
ST	<b>silver</b> electrolytic stripping <b>copper</b> alloy; <b>succinimide</b> soln <b>silver</b> electrolytic stripping; sulfuric acid washing <b>succinimide</b>				
IT	7664-93-9, Sulfuric acid, uses				
IT	RL: USES (Uses) (rinsing with, after electrolytic stripping of <b>silver</b> from <b>copper</b> alloys)				
IT	123-56-8, <b>Succinimide</b> RL: USES (Uses) ( <b>silver</b> electrolytic stripping from <b>copper</b> alloys in soln. contg.)				
IT	59028-48-7 RL: USES (Uses) ( <b>silver</b> electrolytic stripping from, in <b>succinimide</b> soln., followed by acid washing)				
IT	7440-22-4, <b>Silver</b> , reactions RL: RCT (Reactant) (stripping of, electrolytic, from <b>copper</b> alloys, acid washing in)				

L141 ANSWER 35 OF 77 WPIDS COPYRIGHT 2000 DERWENT INFORMATION LTD  
 AN 1992-110693 [14] WPIDS  
 DNN N1992-082919 DNC C1992-051277  
 TI Mfg. heat- wear- and vibration-resistant specular material - by forming material on surface of glass, thermal spraying using **silver solder** material, etc..  
 DC M13 P73  
 PA (YAWA) NIPPON STEEL CORP  
 CYC 1  
 PI JP 04053743 A 19920221 (199214)\* 4p  
 ADT JP 04053743 A JP 1990-162923 19900622  
 PRAI JP 1990-162923 19900622  
 IC B32B007-12; B32B015-04; B32B031-00; C23C004-00  
 AB JP 04053743 A UPAB: 19931006  
 The specular material is made by forming desired material into a given thickness film on the surface of a glass, as a temporary matrix, by thermal spraying, placing **Ag-solder** or insert material, as a cementing material, placing a member, as a matrix, on the cementing material, pressing and heating to cement them, peeling cemented material from the glass surface after development of bonding strength to

form a sprayed film of the desired material on the surface of the member, as matrix.

USE- Used for shot blasting blades for continuous **surface treatment** of steel sheet.

0/5

FS CPI GMPI

FA AB

MC CPI: M13-H; M23-A04

L141 ANSWER 36 OF 77 WPIDS COPYRIGHT 2000 DERWENT INFORMATION LTD  
 AN 1992-160171 [20] WPIDS  
 DNN N1992-120091 DNC C1992-073939  
 TI Partial metallisation of substrate simply and economically - by applying metal cpd. **soln.** with pen pref. using organo-metallic cpd. and UV exposure, e.g. in microelectronics.  
 DC A35 G05 L03 M13 P75 U11 U14 V04  
 IN ESROM, H; KOGELSCHATZ, U  
 PA (ALLM) ABB PATENT GMBH; (HERA) HERAEUS NOBLELIGHT GMBH  
 CYC 7  
 PI DE 4035080 A 19920507 (199220)\* 5p  
 EP 484808 A 19920513 (199220) DE 6p  
 R: CH DE FR GB LI NL  
 JP 04272182 A 19920928 (199245) 5p C23C018-14 <--  
 EP 484808 A3 19940209 (199518)  
 ADT DE 4035080 A DE 1990-4035080 19901105; EP 484808 A EP 1991-118471  
 19911030; JP 04272182 A JP 1991-286785 19911031; EP 484808 A3 EP  
 1991-118471 19911030  
 PRAI DE 1990-4035080 19901105  
 REP No-SR.Pub; 2.Jnl.Ref; DE 2757029; EP 349946; JP 59177358; NL 8700833; US  
 4668533  
 IC ICM **C23C018-14**  
 ICS B41M005-00; **C23C018-31**; C25D003-02; H01L021-90; H05K003-18;  
 H05K003-24  
 ICA H05K003-10  
 AB DE 4035080 A UPAB: 19940727  
 In the prodn. of partial metal coatings from a metal cpd. (I), esp. organometallic cpd. (IA) on a substrate by exposure with a light source, a film of (I) **soln.** is applied to the substrate surface with writing equipment and exposed to UV photons of definite wavelength.  
 Pd, Cu, Pt, Co, Ni, Ag or Au films are formed, pref. by using a **soln.** of Pd, Co or Ni acetate, Pd acetyl-acetonate, Pd chloride, Cu formate, Ag neodecanate, cyclopentadienyl-Pd allyl or cyclopentadienyl-Pd chloride in CHCl<sub>3</sub>, alcohol or water.  
 A (high power) UV source is used, pref. emitting radiation in the 60-400 nm wavelength range. The metal film is enhanced by chemical plating or electroplating, pref. with Cu, Ni, Pd, Pt, Al, Au, Cr or Sn.  
 USE/ADVANTAGE - The process is claimed for partial metallisation of (in)organic substrates. Structurised metalisation can be applied to any surface, e.g. ceramics (Al<sub>2</sub>O<sub>3</sub>, AlN), quartz, glass and Si, flexible plastics ('Teflon' (RTM), **polyimides** etc.), rubber, nonwoven plastics or glass fibre mats, ceramic filled or glass fibre fabric reinforced fluoro-plastics, pressboards, paper and cardboard with little resistance to high temps.. The method is simple, rapid, environmentally friendly and economical, since no (I) is wasted. It gives good quality metallisation with good adhesion and electrical conductivity, which can be **soldered** and bonded without difficulty. Structures finer than 100 microns, e.g. line widths of 50 microns, can be produced without using costly vacuum appts. and masks, making the technique suitable for producing very fine wiring tracks with high integration density, e.g. miniaturised coils, solar cells and display cells for microelectronics, PCBs, hybrid and sensor technology, for repairing and tuning circuits and also for decorative purposes. (1/1)

1/1  
 Dwg. 1/1  
 FS CPI EPI GMPI  
 FA AB; GI  
 MC CPI: A11-C04B1; G06-D06; G06-F04; L02-A07; L02-J01A; L03-H04E3; M13-B  
 EPI: U11-C05C5; U14-H04A2; V04-R02

L141 ANSWER 37 OF 77 METADEX COPYRIGHT 2000 CSA  
 AN 1992(11):61-898 METADEX  
 TI Silver Plating of Mux-Demux Filters.  
 AU Rajgopal I. (National Aeronautical Laboratory (India)); Rajam, K.S. (National Aeronautical Laboratory (India)); Rajagopalan, S.R. (National Aeronautical Laboratory (India))  
 SO Metal Finishing (Apr. 1992) 90, (4), 33-37, 3 ref.  
 ISSN: 0026-0576  
 DT Journal  
 CY United States  
 LA English  
 AB Communications satellites use electrical filters for multiplying signals sent from the satellite, and demultiplexing signals the satellite receives. These electrical filters are known as Mux-Demux filters. In a satellite, the temperature ranges from -10 to 55 deg C. Due to thermal expansion, the size of the cavity of the filter changes and shifts the center of frequency of operation. To prevent drift from the center frequency that occurs with change in temperature, a material with an extremely low coefficient of thermal expansion [0.00] should be used. Invar has a low coefficient of thermal expansion [2 x 10-6 deg C], and a low electrical conductivity at the operation frequency. Poor conductivity results in loss of signal referred to as insertion loss. Insat-class satellites operate at a center of frequency of 400 MHZ, drifting < 0.3 MHZ when cycled between -10 and 70 deg C, and with extremely low insertion loss. There are several problems associated with Ag plating of Invar filters. The surface of Invar is initially covered with an oxide film that is difficult to remove. Oxide film presence is a problem of metal-metal bonding, resulting in poor adhesion. Invar is heat treated at 400 deg C to improve dimensional stability, and this complex oxide is formed on the surface from NiO2-FeO2; it appears black and is quite adherent. A Ni strike bath removes oxide coating, followed by Ni plating to provide an adequate thickness of Ni so that the coating is pore free. Nickel plating is followed by an Ag strike bath using Ag anodes. Silver is plated from a silver cyanide plating bath. Silver plating should aid soldering. Grain refinement is achieved by control of cyanide concentration and operating conditions. There is also a surface treatment for tarnish prevention. The coefficient of thermal expansion of [Ag] is 20 times larger than invar, causing thermal stress due to expansion of Ag coating. This can cause the deposit to peel and adhesion is not good. Thickness should be uniform 5-6  $\mu$ m to guard against thermal expansion and ensure adequate surface conductivity. Brazed joints should not be affected at any stage of plating. The stability of the finished filter is good, with the final coefficient of thermal expansion < 2 x 10-6 deg C between -10 and 50 deg C.  
 CC 61 Engineering Components and Structures  
 CT Journal Article; Ferrous alloys: Coating; Low expansion alloys: Coating; Electric filters: Coating; Nickel plating; Silver plating; Chemical cleaning; Surface pretreatments; Thermal expansion: Coating effects; Communication satellites  
 ALI Invar CCA: FE  
 ET Ag; Fe\*Ni\*O; Fe sy 3; sy 3; Ni sy 3; O sy 3; NiO2; Ni cp; cp; O cp; FeO2; Fe cp; NiO2-FeO2; Ni

L141 ANSWER 38 OF 77 WPIDS COPYRIGHT 2000 DERWENT INFORMATION LTD  
 AN 1991-211908 [29] WPIDS  
 DNC C1991-092107  
 TI Nickel-plating of silver solder - includes  
 KATHLEEN FULLER EIC 1700 308-4290

pre-treatment by selectively electrolytically etching of **silver**.  
 DC E19 M11  
 PA (SHIA) SHINKO DENKI KOGYO KK  
 CYC 1  
 PI JP 03134198 A 19910607 (199129)\* 5p  
 JP 2799006 B2 19980917 (199842) 5p C25D005-34  
 ADT JP 03134198 A JP 1989-271397 19891018; JP 2799006 B2 JP 1989-271397  
 19891018  
 FDT JP 2799006 B2 Previous Publ. JP 03134198  
 PRAI JP 1989-271397 19891018  
 IC C07D207-00; C07D211-00; **C23C018-18**; C25D005-34; C25F003-02  
 ICM C25D005-34  
 ICS C07D207-00; C07D211-00; **C23C018-18**; C25F003-02  
 AB JP 03134198 A UPAB: 19930928  
 The method comprises (1) electrolytically etching **silver**  
**solder** surface with an electrolytic etching liq (A) contg. (a)  
 pentacyclic cpd(s). and/or (a) hexacyclic cpd(s). contg. N, such as  
**succinimide**, **glutarimide**, proline, barbituric acid,  
 uracil, 2-pyrrolidone, 3-pyrrolidone and 2-pyrrolidone -5-carboxylic acid  
 and (2) Ni-plating the **silver solder**  
 surface.

Pref. (A) contains an alkaline ingredient, such as KOH and NaOH, to  
 control the electrical conductivity and contains (a) surfactants of  
 pyridinium salts such as laurylpyridinium chloride, alkylsulphonates such  
 as sodium laurylsulphate, polyoxyethylene sorbitan fatty acid esters  
 and/or polyoxyethylene alkylphenol ethers.

ADVANTAGE - An oxide film on the **silver solder** is  
 removed and the **silver** etched selectively so that the  
**silver solder** surface becomes rich in **copper**.

Thus an Ni-plating layer with good adhesion can be formed on the  
**silver solder**.

0/0

FS CPI  
 FA AB; DCN  
 MC CPI: E07-D02; E07-D03; E07-D05; E07-D12; M11-A02; M11-B05; M11-B09;  
 M11-H04

L141 ANSWER 39 OF 77 WPIDS COPYRIGHT 2000 DERWENT INFORMATION LTD  
 AN 1991-363045 [50] WPIDS  
 CR 1991-363036 [50]  
 DNN N1991-278098 DNC C1991-156390  
 TI Polymersic base material catalytic for **copper** deposition -  
 comprises silicate catalyst dispersed in base and hydroxyl-contg. aromatic  
 moiety resolved in or attached to base polymers.  
 DC A21 A32 A85 A94 L03 M13 V04  
 IN KOHM, T S  
 PA (AMPI) AMP-AKZO CORP; (AMPI) AMP AKZO CORP  
 CYC 11  
 PI EP 460548 A 19911211 (199150)\*  
 R: CH DE ES FR GB IT LI NL SE  
 JP 04231472 A 19920820 (199241) 11p C23C018-16 <--  
 US 5338567 A 19940816 (199432) 8p C23C026-00 <--  
 ADT EP 460548 A EP 1991-108947 19910531; JP 04231472 A JP 1991-136791  
 19910607; US 5338567 A CIP of US 1990-534959 19900608, Cont of US  
 1991-698851 19910513, US 1992-979481 19921120  
 PRAI US 1990-534959 19900608; US 1991-698851 19910513  
 REP NoSR.Pub  
 IC ICM **C23C018-16**; **C23C026-00**  
 ICS **C23C018-20**; H05K001-03; H05K003-18; H05K003-42  
 AB EP 460548 A UPAB: 19930928  
 A polymersic base material (I), catalytic for **copper** deposition,  
 comprises a catalyst comprising a particulate silicate filler dispersed in  
 the polymersic base material and an aromatic moiety having a hydroxyl  
 substit. dissolved in or attached to the polymers of the base material.

(I) opt. further comprises a second catalyst selected from Pd, Pt, Ru, Ir, Rh, Ag or Au and cpds. and mixts. thereof.

USE/ADVANTAGE - (I) is used as a base for printed wiring boards including those mfd. by both subtractive and additive processes and includes boards having plated-through holes. Catalytic activity for electroless metal deposition is greatly enhanced compared with prior art base materials. Walls of plated-through holes do not crack when subjected to thermal stress (i.e. when exposed to solder at 288 deg.C for 10 secs.). The base material is resistant to attack by alkaline solns., e.g. electroless Cu deposition systems and has low water absorption.

0/0

FS CPI EPI

FA AB

MC CPI: A05-A01E2; A05-C01B; A08-D; A12-E07A; L03-H04E1; L03-H04E3; M13-B  
EPI: V04-R02A; V04-R07

L141 ANSWER 40 OF 77 COMPENDEX COPYRIGHT 2000 EI

AN 1992(10):123345 COMPENDEX DN 9210131732

TI Silver plating from silver methanesulfonate-potassium iodide bath.

AU Kondo, Tetsuya (Daiwa Fine Chemicals Co Ltd, Hyogo, Jpn); Masaki, Seishi; Inoue, Hiroyuki; Yamakawa, Koji

SO Met Finish v 89 n 10 Oct 1991 p 32-36  
CODEN: MEFIA7 ISSN: 0026-0576

PY 1991

DT Journal

TC Experimental; Application

LA English

AB This report describes the results of our work on the search for a practical cyanide-free silver bath by evaluating the effects of the additive, HBPSA, on the plated deposit in terms of the appearance of the deposit, cathode efficiency, throwing power, electrical properties, and surface characteristics. It was found that N-(3-hydroxy-1-butyldene)-p-aminobenzenesulfonic acid (HBPSA) was the best additive for the bath system in providing a deposit with fine grain structure and appearance, which is better than or comparable to the deposit obtained from the conventional cyanide bath. 14 Refs.

CC 539 Metals Corrosion &amp; Protection; 547 Precious &amp; Rare Earth Metals &amp; Alloys; 804 Chemical Products; 702 Electric Batteries &amp; Fuel Cells; 803 Chemical Agents &amp; Basic Industrial Chemicals; 704 Electric Components &amp; Equipment

CT \*SILVER PLATING; ELECTROLYTES: Additives; ELECTRIC CONTACTS: Electroplating; SILVER AND ALLOYS: Electrodeposition; ORGANIC COMPOUNDS

ST HYDROXY BUTYLDENE AMINOBENZENESULFONIC ACID; SILVER METHANESULFONATE; POTASSIUM IODIDE; HULL CELL TEST; CONTACT ELECTRICAL RESISTANCE; SURFACE TOPOGRAPHY

ET N

L141 ANSWER 41 OF 77 METADEX COPYRIGHT 2000 CSA

AN 1992(1):55-13 METADEX

TI Method of Soldering Aluminum.

AU Divecha, A.P. (US Navy); Ferrando, W.A. (US Navy); Hesse, P.W. (US Navy); Karmarkar, S.D. (US Navy)

PI US 4958763 25 Sept. 1990

AD 29 Aug. 1989

DT Patent

LA English

AB An Al or Al alloy surface is coated with molten AgNO<sub>3</sub>, the silver nitrate is decomposed (at approx 450-550 deg C) leaving a thin layer of Ag metal, and then an inter-diffusion layer of Ag and Al is formed (at approx 570-660 deg C). The treated surface can be soldered by conventional means.

CC 55 Joining

CT Patent; Aluminum: Soldering; Aluminum base alloys: Soldering; Surface

KATHLEEN FULLER EIC 1700 308-4290

pretreatments; Patents  
 ET Al; Ag\*N\*O; AgNO3; Ag cp; cp; N cp; O cp; Ag

L141 ANSWER 42 OF 77 COMPENDEX COPYRIGHT 2000 EI  
 AN 1990(11):131622 COMPENDEX DN 9011135717  
 TI Additive enhanced nonaqueous electrodeposition of silver on Ba2YCu3O7.  
 AU Rosamilia, J.M. (AT&T Bell Lab, Murray Hill, NJ, USA); Miller, B.  
 SO J Mater Res v 5 n 8 Aug 1990 p 1612-1615  
 CODEN: JMREEE ISSN: 0884-2914

PY 1990  
 DT Journal  
 TC Experimental  
 LA English  
 AB A nonaqueous plating bath for silver  
 deposition on a Ba2YCu3O7 superconductor has been modified with thiourea to give enhanced coverage of the metal film at low thickness. For both porous and high density ceramic substrates, SEM and optical microscopy show that nucleation of silver deposits is increased by the additive. The resulting silver-superconductor contact resistances are comparable to those achieved without additives. Adhesion of the deposits and ease of mechanical handling are improved with thiourea. The combination of a highly reactive oxidized substrate, nonaqueous solvent, and strongly surface active agent forms a novel extension for electrodeposition science. (Edited author abstract) 12 Refs.

CC 708 Electric & Magnetic Materials; 539 Metals Corrosion & Protection; 804 Chemical Products; 812 Ceramics & Refractories; 547 Precious & Rare Earth Metals & Alloys; 804 Chemical Products

CT \*SUPERCONDUCTING MATERIALS:Protective Coatings; CERAMIC MATERIALS:Protective Coatings; BARIUM COMPOUNDS:Protective Coatings; SILVER PLATING:Solutions; SURFACE ACTIVE AGENTS; SILVER AND ALLOYS:Electrodeposition

ST BARIUM YTTRIUM COPPER OXIDES; HIGH TEMPERATURE SUPERCONDUCTORS; CONTACT RESISTANCE; THIOUREA; OXIDE SUPERCONDUCTORS; CERAMIC SUPERCONDUCTORS

ET Ba\*Cu\*O\*Y; Ba sy 4; sy 4; Cu sy 4; O sy 4; Y sy 4; Ba2YCu3O7; Ba cp; cp; Y cp; Cu cp; O cp

L141 ANSWER 43 OF 77 WPIDS COPYRIGHT 2000 DERWENT INFORMATION LTD  
 AN 1989-162020 [22] WPIDS  
 DNN N1989-123360 DNC C1989-072020  
 TI Alloy films formation contg. multiple components - by repeatedly electroplating, and heating for fusion treatment.

DC L03 M11 U11 V04  
 PA (SHIA) SHINKO KOGYO KK  
 CYC 1  
 PI JP 01104796 A 19890421 (198922)\* 3p  
 ADT JP 01104796 A JP 1987-262278 19871016  
 PRAI JP 1987-262278 19871016  
 IC C23C026-00; C25D005-50; H01L023-50; H05K003-18  
 AB JP 01104796 A UPAB: 19930923  
 A multilayered coating is formed on the object by repeatedly electroplating, and heating for fusion treatment to give a single layer contg. a number of metal elements.  
 USE/ADVANTAGE - Provides an alloy coating contg. three or more components at low temps. The compsn. and thickness are easily controlled to provide films suitable for use in various parts of printed circuit boards, IC lead frames, etc.  
 In an example, a lead frame having a Cu-base coating was subjected to Sn-20% Pb solder plating and Ag plating. The obtd. 15 micron thick Sn-Pb plating and 0.5 micron thick Ag plating were together immersed in an ethylene glycol bath at 210 deg.C for 2 sec. to give a Sn-14%Pb-6%Ag alloy film.  
 0/0  
 FS CPI EPI

FA AB  
 MC CPI: L03-H04E3; L04-C23; M11-B03  
 EPI: U11-A09; U11-D03A1; U11-D03B; V04-R02

L141 ANSWER 44 OF 77 WPIDS COPYRIGHT 2000 DERWENT INFORMATION LTD  
 AN 1988-309005 [44] WPIDS  
 DNN N1988-234534 DNC C1988-136642  
 TI **Solder** repellent coating for tools - is esp. for automatic circuit board component mounting machine.  
 DC A82 L03 M13 P55 V04  
 IN FRELLER, H; HORAUF, F; LORENZ, H P; SCHACK, P  
 PA (SIEI) SIEMENS AG  
 CYC 13  
 PI EP 289006 A 19881102 (198844)\* DE 6p  
 R: AT BE CH DE ES FR GB GR IT LI LU NL SE  
 EP 289006 B 19901128 (199048)  
 R: AT BE CH DE ES FR GB GR IT LI LU NL SE  
 W: JP US  
 JP 02500451 W 19900215 (199013)  
 EP 289006 B 19901128 (199048)  
 R: AT BE CH DE ES FR GB GR IT LI LU NL SE  
 DE 3861161 G 19910110 (199103)  
 ES 2019428 B 19910616 (199129)  
 US 5100701 A 19920331 (199216) 4p  
 ADT EP 289006 A EP 1988-106769 19880427; EP 289006 B WO 1988-DE251 19880427;  
 JP 02500451 W JP 1988-503472 19880427; US 5100701 A US 1990-442340  
 19900202  
 FDT US 5100701 A Based on WO 8808356  
 PRAI DE 1987-3714339 19870429  
 REP DE 1446741; EP 170359; EP 206121; FR 2172236; FR 2321533; GB 2130253; US 2740193; US 4204886; US 4420110  
 IC B23K003-02; B23K035-22; C23C028-00; C23C030-00  
 AB EP 289006 A UPAB: 19940303  
 A **solder** repellent coating for tools, esp. gripping, insertion and bending tools of automatic electrical component mounting machines, consists of a metal nitride base coating and a top coating having solid lubricant properties (e.g. a coating of Teflon, Ag:MoS<sub>2</sub> or a metal-carbon combination).  
 ADVANTAGE - The coating allows the tools, esp. 'outside-former' bending tools of automatic circuit board component mounting machines, to be used for mounting operations more than 25 times greater than that of conventional tools, without requiring tool maintenance.  
 Dwg.1/2  
 FS CPI EPI GMPI  
 FA AB; GI  
 MC CPI: A04-E08; A12-B01F; A12-H; L04-D07; M23-A  
 EPI: V04-R04; V04-V01

L141 ANSWER 45 OF 77 METADEX COPYRIGHT 2000 CSA  
 AN 1988(11):63-363 METADEX  
 TI A Method of Forming a Metal Film on the Surface of a Substrate Metal.  
 AU Kono, M.; Husegawa, Y.; Nishi, Y.  
 CS Harima Chemicals  
 PI GB 2192197 A 6 Jan 1988  
 AD 19 May 1987  
 DT Patent  
 LA English  
 AB The method comprises soaking a substrate metal or a non-metal support carrying the substrate metal in a solution of a metal salt in a high boiling point solvent under heating, the metal of the salt being that which is to be coated on the surface of the substrate metal and the acid part of the salt deriving from a substance selected from an organic carboxylic acid, rosin and a rosin derivative. The metal to be coated on the substrate metal has a smaller ionization tendency than the substrate.

The metal is precipitated from the solution exclusively on to the surface of the substrate metal without forming any solid metal particles in the solution or on the substrate metal. Numerous carboxylic acids and rosin derivatives are specified as constituting the acid part of the salt and the salts of the following are used: naphthenic acid (Sn, Pb); neodecanoic acid (Sn, Pb); stearic acid (Pb, Sn); benzoic acid (Sn, Pb); oleic acid (Sn, Pb, Cu, Ni, Ag); phthalic acid (Ag); isophthalic acid (Ag); sebacic acid (Ag); fumaric acid (Ag); trimellitic acid (Ag); pyromellitic acid (Ag). A suitable solvent is squalene or mineral spirits, and the solution may be applied to a Ni electroplated substrate. Thus, the method is applicable to the formation of a soldering alloy as a film on the surface of a substrate metal without leaving thereon any free metal particles which may cause short circuits in electronic circuits. The method can thus be applied advantageously to the manufacture of electronic elements having a metal film thereon and high density printed circuits.

CC 63 ELECTRONIC DEVICES

CT Lead (metal): Coatings; Tin: Coatings; Silver: Coatings; Nickel: Coating; Electroplates: Coating; Alloy plating; Solvents; Organic salts; Immersion plating; Printed circuits

ET Sn; Pb; Cu; Ni; Ag

L141 ANSWER 46 OF 77 METADEX COPYRIGHT 2000 CSA

AN 1988(6):63-216 METADEX

TI Developments of the Application Technology for Hot- and Cold-Rolled as Well as Surface-Treated Products at Thyssen Stahl AG.

AU Strassburger, C.; Schneider, C.

CS Thyssen Stahl

SO Stahl Eisen (22 Feb. 1988) 108, (4), 31-39

ISSN: 0340-4803

DT Journal

LA German

AB Application engineering is a new discipline of steel research and development. Results are given of application engineering activities for hot-rolled products (heavy plate, hot rolled wide strip, steel sections and wire rod): The factors tested were weldability, the cooling time concept for unalloyed and low-alloy steels, base metal welding of 9% Ni-steels, cold bending and Bauschinger effect, drawability of rope wire and calculation of rope cross-sectional figures. For cold-rolled and surface-treated sheets, results are given for the following: resistance spot welding, hard soldering, laser beam welding, sticking and pretreatment, painting and corrosion testing. The development of composite materials is illustrated by the example of steel/SMC. 25 ref.-AA

CC 63 ELECTRONIC DEVICES

CT Nickel steels: Mechanical properties; End uses; Mechanical properties; Weldability; Corrosion resistance; Composite materials: Materials selection

ALI X8Ni9 CCA: SAN; StE690, StE890 CCA: SANCM; StE500 CCA: SALHS

ET Ni

L141 ANSWER 47 OF 77 HCPLUS COPYRIGHT 2000 ACS

AN 1989:449064 HCPLUS

DN 111:49064

TI Metal-core board for hybrid integrated circuits and method for manufacturing it

IN Shirai, Hideaki; Chibia, Kimio; Okawa, Koji; Ishibashi, Hiroshi; Ishii, Akihiro; Itoh, Hirotaka; Kuzushita, Hirokazu; Yoshioka, Michihiko; Hirose, Michio

PA Dainichi Nippon Cables, Ltd., Japan

SO U.S., 9 pp.

CODEN: USXXAM

DT Patent

LA English

IC B32B015-08

NCL 428458000

CC 76-14 (Electric Phenomena)

FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 4695515	A	19870922	US 1985-759210	19850726
	JP 61148899	A2	19860707	JP 1984-271425	19841222
	JP 04021358	B4	19920409	JP 1984-271426	19841222
PRAI	JP 1984-U118195	19840730			
	JP 1984-U118196	19840730			
	JP 1984-271425	19841222			
	JP 1984-271426	19841222			
AB	The board has a base <b>metal</b> core, a layer of an easily <b>solderable metal</b> formed by <b>plating</b> on both sides of the core, an elec. insulating layer on 1 easily <b>solderable metal</b> layer, and an elec. conductive metal layer on the insulating layer. An Al <b>plate</b> 1-mm thick was treated with NaOH <b>soln.</b> to remove Al oxide from the surface, coated with Zn by electroless <b>plating</b> , and then with Cu by <b>electroplating</b> . One of the Cu layers was masked by PVC visco-adhesive tape, and the other was roughened and coated electrophoretically with epoxy-acrylic varnish. The varnish was treated with DMF and cured at 150.degree. for 30 min. A Cu foil was then adhered to the varnish, using an adhesive, by pressing at 20 kg/cm <sup>2</sup> and 200.degree.. A board .apprx.1.1-mm thick was obtained.				
ST	<b>metal</b> core board hybrid integrated circuit; varnish insulator <b>metal</b> core board				
IT	<b>Polyimides</b> , uses and miscellaneous				
	RL: TEM (Technical or engineered material use); USES (Uses) (elec. insulators, in <b>metal</b> -core boards for hybrid integrated circuits)				
IT	<b>Solders</b>				
	(metal cores plated with, for boards for hybrid integrated circuits)				
IT	Electric insulators and Dielectrics				
	(metal-core boards contg., for hybrid integrated circuits)				
IT	Epoxy resins, uses and miscellaneous				
	RL: TEM (Technical or engineered material use); USES (Uses) (acrylic, elec. insulators, in <b>metal</b> -core boards for hybrid integrated circuits)				
IT	Acrylic polymers, uses and miscellaneous				
	RL: TEM (Technical or engineered material use); USES (Uses) (epoxy, elec. insulators, in <b>metal</b> -core boards for hybrid integrated circuits)				
IT	Electric circuits				
	(hybrid integrated, boards, <b>metal</b> -core, having easily <b>solderable metal</b> and elec. insulator layers)				
IT	Glass fibers, uses and miscellaneous				
	RL: USES (Uses)				
	(textiles, elec. insulators from epoxy resins reinforced with, in boards for hybrid integrated circuits)				
IT	Aluminum alloy, base				
	Iron alloy, base				
	RL: USES (Uses)				
	(boards having cores of, for hybrid integrated circuits)				
IT	7429-90-5, Aluminum, uses and miscellaneous 7439-89-6, Iron, uses and miscellaneous 12597-69-2, Steel, uses and miscellaneous				
	RL: USES (Uses)				
	(boards having cores of, for hybrid integrated circuits)				
IT	25852-42-0, Acrylic acid-ethyl acrylate-methylol acrylamide copolymer 35705-87-4, Acrylic acid-acrylonitrile-glycidyl methacrylate-styrene copolymer 57604-74-7, Acrylic acid-acrylonitrile-glycidyl methacrylate copolymer 57604-75-8 57604-76-9, Acrylonitrile-glycidyl methacrylate-maleic acid copolymer				
	RL: USES (Uses)				

(elec. insulating varnish, in **metal**-core boards for hybrid integrated circuits)

IT 40364-42-9  
 RL: USES (Uses)  
 (elec. insulators from glass cloth impregnated with, in **metal**-core boards for hybrid integrated circuits)

IT 106043-65-6, V 551-20  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (elec. insulators, in **metal**-core boards for hybrid integrated circuits)

IT 7439-92-1, Lead, uses and miscellaneous 7440-02-0, Nickel, uses and miscellaneous 7440-22-4, **Silver**, uses and miscellaneous 7440-31-5, Tin, uses and miscellaneous 7440-50-8, **Copper**, uses and miscellaneous 7440-57-5, Gold, uses and miscellaneous  
 RL: USES (Uses)  
 (**metal** cores **plated** with, for boards for hybrid integrated circuits)

L141 ANSWER 48 OF 77 HCAPLUS COPYRIGHT 2000 ACS

AN 1987:215177 HCAPLUS

DN 106:215177

TI **Metal**-plated plastic products

IN Shimizu, Norio; Shimizu, Noriyuki; Harada, Akiji; Miyamoto, Masami

PA Nikkan Industries Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C23C018-16

ICS H05K003-18

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 56, 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 61253372	A2	19861111	JP 1985-94430	19850430
AB	Plastic products contg. K titanate fibers or K titanate powder on the surface are treated with <b>Ag</b> ion solns . contg. reducing agents to form strongly bonded <b>Ag</b> coatings. The plastic products may be further coated with other <b>metals</b> . Thus, WE-18W-BY-55 (glass cloth) was impregnated with an epoxy resin varnish contg. K titanate powder and dried to give preprints, 8 sheets of which were laminated with each other and with Tedlar [poly(vinyl fluoride)] films on both sides and hot pressed to give a laminate. This laminate was drilled, masked so that <b>metal</b> wires could be formed later, treated with a <b>AgNO3</b> soln. contg. HCHO, and treated with <b>CuSO4</b> to form 20-.mu. <b>Cu</b> plating on the through holes as wirings. The <b>Cu</b> plating had peel strength 1.8 kg/cm, elec. resistance 1 .times. 1012 .OMEGA., excellent <b>solder</b> resistance (1 min at 260.degree.) under std. conditions, and peel strength 1.9 kg/cm after 1 h treatment at 200.degree..				
ST	elec wire formation <b>silver</b> plating; <b>silver</b> plating plastic product; potassium titanate plastic <b>metal</b> coating; <b>copper</b> plating plastic product				
IT	Epoxy resins, uses and miscellaneous Polyamides, uses and miscellaneous RL: USES (Uses) (potassium titanate-contg., <b>silver</b> coating of, elec. wire formation in relation to)				
IT	Electric circuits (printed, wire formation on potassium titanate-contg. plastics for)				
IT	12673-69-7, Potassium titanate RL: USES (Uses) (plastic products contg., <b>metal</b> plating of, for formation of				

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elec. wires)  
 IT 7440-22-4, **Silver**, uses and miscellaneous 7761-88-8,  
**Silver** nitrate, uses and miscellaneous  
 RL: USES (Uses)  
 (plating with, of potassium titanate-contg. plastics, elec. wire  
 formation in relation to)  
 IT 7440-50-8, **Copper**, uses and miscellaneous  
 RL: USES (Uses)  
 (plating with, of **silver**-coated potassium titanate-contg.  
 plastics, elec. wire formation in relation to)

L141 ANSWER 49 OF 77 WPIDS COPYRIGHT 2000 DERWENT INFORMATION LTD  
 AN 1986-264636 [40] WPIDS  
 DNN N1986-197824 DNC C1986-114541  
 TI Laser fusing metal powder to substrate - by mixing with lamp-black to  
 enhance laser coupling and applying laser power, opt. in specific pattern.  
 DC L03 M13 M23 P42 P53 P55 V03 V04  
 IN REICHENECK, W J  
 PA (AEGE) AEG WESTINGHOUSE IN; (WESE) WESTINGHOUSE ELECTRIC CORP  
 CYC 7  
 PI US 4612208 A 19860916 (198640)\* 3p  
 EP 199589 A 19861029 (198644) EN  
 R: DE FR GB SE  
 JP 61245988 A 19861101 (198650)  
 EP 199589 B 19890118 (198903) EN  
 R: DE FR GB SE  
 DE 3661844 G 19890223 (198909)  
 CA 1283005 C 19910416 (199120)  
 ADT US 4612208 A US 1985-725449 19850422; EP 199589 A EP 1986-303045 19860422;  
 JP 61245988 A JP 1986-93186 19860421  
 PRAI US 1985-725449 19850422  
 REP CH 593757; CH 618468; DD 146873; DE 2446634; US 4048459; US 4117302  
 IC B05D003-06; B22F007-00; B23K009-04; B23K026-00; **C23C010-30;**  
**C23C024-10**; H01H001-02; H05K003-10  
 AB US 4612208 A UPAB: 19930922

Cu is clad with a highly reflective material, by (a) admixing a highly  
 reflective material with lampblack powder; (b) depositing the mixt. onto a  
 Cu substrate; and (c) applying laser power to the deposited mixt..  
 A specific design is applied to a substrate by selectively coupling  
**Ag**, **Au**, **Sn** or **solder** alloy to the substrate by (i)  
 covering the substrate surface with a loose powder mixt. of the selected  
 material and lampblack; (ii) applying laser power to the specific design  
 areas of the substrate, coupling the mixt. to the substrate only in those  
 areas, leaving uncoupled loose powder on other areas; and (iii)  
 subsequently removing loose powder from the substrate.

ADVANTAGE - Method is useful in spot coating Cu components, e.g. to  
 form contacts, and applying uniform **solder** coatings e.g. for  
**soldering**, corrosion protection or appearance. The lampblack can  
 also be used to enhance laser coupling for laser shock hardening. The  
 lampblack enhances the surface absorbence of reflective material and  
 substrate, providing effective coupling of the laser and reflective  
 material without selecting a specific laser wavelength for different  
 materials. It promotes deoxidising and fluxing, is insol. in specified  
 materials, so provides no contamination, and improves the flow properties  
 of **Ag**. The patterning process **replaces**  
**electroplating**, eliminating the need for a mask and providing  
 thicker adherent coatings.

00

FS CPI EPI GMPI  
 FA AB  
 MC CPI: L03-H04E3; M13-H02; M23-A04  
 EPI: V03-A09; V04-P09; V04-R04A

L141 ANSWER 50 OF 77 METADEX COPYRIGHT 2000 CSA  
 KATHLEEN FULLER EIC 1700 308-4290

AN 1991(4):55-949 METADEX  
 TI Processing of Modern Surface-Treated Steel Sheets by Forming and Welding Processes. (Retroactive Coverage).  
 AU Blumel, K.; Frings, A.  
 SO Sheet Metal Working '86 (Blechbearbeitung '86)  
 VDI Verlag, Postfach 1139, Graf-Recke-Strasse 84, 4000 Dusseldorf 1, FRG.  
 1986. 129-147  
 See also AN: 91(4):72-214  
 DT Book  
 LA German  
 AB The application at Thyssen AG of resistance spot welding, MIG hard soldering and laser-beam welding to metal-coated automotive steel sheets and the subsequent forming of the joined products are reviewed. The critical effects on formability of coating ductility, adhesion and wear resistance and thus of the production process, coating thickness and method of passivation are discussed, with emphasis on the prominent role of the intermediate alloyed layer. Resistance spot welding is characterised mainly by increases in welding current and electrode pressure of <= 30% and approx 10% respectively compared with uncoated cold-rolled sheet, whilst fluxless hard soldering has the advantage of a limited heat affected zone. Carbon-monoxide laser-beam welding is used predominantly for the production of extra-wide hot-dip galvanized sheets. The Shapeset and Dieset drawing processes developed by Thyssen for the production of hat-shaped products and support beams respectively from their high-strength hot-dip galvanized sheet are described, followed by a brief report on single-stage and two-stage pressure joining. Graphs. 5 ref.-L.T.  
 CC 55 JOINING  
 CT Automotive engineering; Precoated strip: Joining; Resistance spot welding; Brazing; Laser beam welding; Deep drawing; Formability; Interlayers

L141 ANSWER 51 OF 77 METADEX COPYRIGHT 2000 CSA  
 AN 1987(4):55-989 METADEX  
 TI The Application of CO<sub>2</sub> Lasers in Metal Working.  
 AU van der Torre, D.  
 SO Lastechniek (Dec. 1986) (12), 247-251  
 ISSN: 0023-8694  
 DT Journal  
 LA Dutch  
 AB In initial general comments, it is pointed out that, while the CO<sub>2</sub> laser has wide applications and is flexible, its high cost price tends to confine its use to mass or repetitive work. There is also limited knowledge of the varied operating parameters. Characteristics of longitudinal and transverse gas flow lasers and relevant factors governing their use for cutting, welding, soldering and surface treatments together with the advantages over conventional methods are discussed. Of prime influence are reflectivity, heat conductivity and melting temperature of the metal. Cutting: the long wave length of CO<sub>2</sub> limits its use with such metals as Cu and Ag; the effectiveness of the use of O<sub>2</sub> with CO<sub>2</sub> lasers in cutting (burning) steel is shown graphically. Welding: laser resembles electron beam welding in many respects with the advantage of no vacuum but the disadvantage of metal fume which can absorb up to 70% of power. Steel, stainless steel, Ni, Ti, Ta, Mo and Zr respond well. Surface treatment: because of its very short incidence time (10-7-1s), the laser has many advantages over conventional methods for transformation hardening, cladding, glazing and other surface treatments. Component costs, ancillary equipment and safety factors are briefly discussed.-G.A.S.  
 CC 55 JOINING  
 CT Laser beam cutting; Laser beam welding; Laser beam hardening  
 ET C\*O; CO<sub>2</sub>; C cp; cp; O cp; Cu; Ag; O<sub>2</sub>; Ni; Ti; Ta; Mo; Zr

L141 ANSWER 52 OF 77 COMPENDEX COPYRIGHT 2000 EI  
 AN 1986(7):90641 COMPENDEX DN \*86110114; 860765005  
 TI SILVER CYANIDE PLATING BATHS.

KATHLEEN FULLER EIC 1700 308-4290

AU Mohler, J.B.  
 SO Met Finish v 84 n 5 May 1986 p 35-38  
 CODEN: MEFIA7 ISSN: 0026-0576  
 PY 1986  
 DT Journal  
 TC Experimental  
 LA English  
 AB Silver plating, one of the earliest electroplating successes, was developed in 1840. This process entered the silver plating market in competition with rolled, silver-clad **copper** (Sheffield plate). Electroplating proved to be a more versatile process. It was applied to shapes as well as sheets. It was applied to many **metals** and could easily be applied in thin layers. Silver salts that are soluble in wafer or cyanide solutions have been deposited from many different solutions. Silver provides a very accurate measure of a quantity of electricity when it is deposited from a silver nitrate solution under controlled conditions. Many solutions of silver continue to be of use for **plating**, but the **silver cyanide bath** continues to be the primary one.<sup>1</sup>  
 ref.  
 CC 539 Metals Corrosion & Protection  
 CT \*SILVER PLATING:Solutions; ANODES; ELECTROPLATING:Quality Control  
 ST SILVER CYANIDE; POTASSIUM CYANIDE; POTASSIUM CARBONATE; SILVER BATHS

L141 ANSWER 53 OF 77 COMPENDEX COPYRIGHT 2000 EI  
 AN 1987(9):147973 COMPENDEX  
 TI ELECTRODE IMPEDANCE AND THE EFFECTS OF ADDITIVES ON THE ELECTRODEPOSITION OF SILVER.  
 AU Farr, J.P.G. (Univ of Birmingham, Engl); Ashiru, O.A.  
 MT Institute of Metal Finishing, Annual Technical Conference and Exhibition.  
 MO Inst of Metal Finishing, Birmingham, Engl  
 ML Bournemouth, Engl  
 MD 15 Apr 1986-19 Apr 1986  
 SO Technical Papers, Annual Technical Conference and Exhibition - Institute of Metal Finishing 1986 v 2. Publ by Inst of Metal Finishing, Birmingham, Engl p 35-57  
 CODEN: TPAFET  
 PY 1986  
 MN 10063  
 DT Conference Article  
 LA English  
 AB The action of a number of levelling agents in low free cyanide **silver plating baths** is described. Amongst these propargyl alcohol and 2,5, dimethyl 2,5 hexane diol can act as both levellers and brighteners. Some levelling agents are also effective in low cyanide gold and **copper** electroplating baths. Current-voltage curves and a.c. impedance measurements distinguish between the electrochemical behaviour of brighteners and levellers. Some indication of the respective mechanisms of action of levellers and brighteners is obtained. (Author abstract) 8 refs.  
 CC 539 Metals Corrosion & Protection; 804 Chemical Products  
 CT \*SILVER PLATING:Additives; SILVER AND ALLOYS:Electrodeposition  
 ST LEVELING AGENTS; BRIGHTENERS; **SILVER PLATING BATHS**; ELECTRODE IMPEDANCE; LEVELING POWER

L141 ANSWER 54 OF 77 COMPENDEX COPYRIGHT 2000 EI  
 AN 1987(3):41271 COMPENDEX DN \*87108992; 870329704  
 TI ELECTRODE IMPEDANCE AND THE EFFECTS OF ADDITIVES ON THE ELECTRODEPOSITION OF SILVER.  
 AU Farr, J.P.G. (Univ of Birmingham, Birmingham, Engl); Ashiru, O.A.  
 SO Trans Inst Met Finish v 64 pt 4 Nov 1986 p 137-141  
 CODEN: TIMFA2 ISSN: 0020-2967  
 PY 1986  
 DT Journal  
 TC Experimental

LA English  
 AB The action of levelling agents in low free cyanide **silver plating baths** is described. Propargyl alcohol and 2,5-dimethyl-2,5-hexane diol can act as both levellers and brighteners. Some levelling agents are also effective in low cyanide gold and **copper** electroplating baths. Current-voltage curves and a.c. impedance measurements distinguish between the electrochemical behaviour of brighteners and levellers. (Edited author abstract) 9 refs.  
 CC 547 Precious & Rare Earth Metals & Alloys; 539 Metals Corrosion & Protection  
 CT \*SILVER AND ALLOYS:Electrodeposition; SILVER PLATING:Solutions  
 ST LEVELING AGENTS; PROPARGYL ALCOHOL; BRIGHTENING AGENTS; IMPEDANCE; 2,5-DIMETHYL-2,5-HEXANE DIOL

L141 ANSWER 55 OF 77 HCAPLUS COPYRIGHT 2000 ACS

AN 1986:44408 HCAPLUS

DN 104:44408

TI Contacts for integrated-circuit chips

IN Igarashi, Kazumasa; Inoue, Naoki; Yamaguchi, Katsuhiko

PA Nitto Electric Industrial Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01B001-20

CC 76-2 (**Electric** Phenomena)

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 60170102	A2	19850903	JP 1984-26724	19840214
AB	The external electrode of an integrated-circuit chip, having a resistance element, an internal electrode, etc., consists of a heat-hardened layer of a <b>polyimide</b> -type conductive paste prep'd. by blending a conductive filler with a siloxane-modified <b>polyimide</b> precursor <b>soln.</b> , which is obtained by mixing H2NzSiR2(OSiR2)nZNH2 (R, Z = org. moiety; n = 1-1000) 1-50, diamines free of Si 50-99, and arom. tetracarboxylic acid dianhydrides or their derivs. 100 mol. External electrodes having excellent heat resistance and strong adhesion to the chip body are prep'd. Thus, 0.1 mol 3,3',4,4'-biphenyltetracarboxylic acid dianhydride was gradually added to N-methyl-2-pyrrolidone <b>soln.</b> contg. 0.0035 mol bis(3-aminopropyl)tetramethyldisiloxane and 0.0965 mol 4,4'-diaminodiphenyl ether and then treated 8 h at 60.degree. to give a siloxane-modified <b>polyimide</b> precursor which was mixed with scale-like <b>Ag</b> powder. This prep'd. paste was applied on both sides of a chip body, having a resistance element, a glass protective film, and an Al2O3 substrate, dried and heat-set 30 min at 250.degree. to form a 45.-mu.-thick external electrode, and then provided with Ni plating and solder plating layers. The prep'd. chip was soldered 10 s at 260.degree. and showed no warping of the external electrode.			
ST	chip heat resistant electrode; siloxane modified <b>polyimide</b> electrode			
IT	<b>Polyimides</b> , uses and miscellaneous Siloxanes and Silicones, uses and miscellaneous			
RL: USES (Uses)	(conductive paste from siloxane-modified, for integrated-circuit contacts)			
IT	Electric contacts ( <b>polyimide</b> -type conductive paste for, for integrated circuits)			
IT	Electric conductors (pastes, <b>polyimide</b> -type, for integrated-circuit contacts)			
IT	101-77-9 101-80-4 2421-28-5 2469-55-8 7440-05-3, uses and miscellaneous 7440-22-4, uses and miscellaneous			

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RL: TEM (Technical or engineered material use); USES (Uses)  
 (polyimide-type conductive paste contg., for  
 integrated-circuit contacts)  
 IT 1344-28-1, uses and miscellaneous  
 RL: USES (Uses)  
 (substrate, for integrated circuit, polyimide-type conductive  
 paste prepn. for electrodes of)

L141 ANSWER 56 OF 77 WPIDS COPYRIGHT 2000 DERWENT INFORMATION LTD

AN 1985-111278 [19] WPIDS

DNN N1985-083560 DNC C1985-048118

TI Bath **soldering** of electronic elements - using endless conveyor  
 belt and surplus **solder** extractors.

DC L03 M23 U11 V04

IN ENGL, A; UNGER, G

PA (SIEI) SIEMENS AG

CYC 1

PI DE 3338347 A 19850502 (198519)\* 7p

ADT DE 3338347 A DE 1983-3338347 19831021

PRAI DE 1983-3338347 19831021; DE 1984-3425717 19840712

IC C23C001-04; H01L021-60; H05K003-34

AB DE 3338347 A UPAB: 19930925

Electronic elements such as semiconductor printed circuit assemblies are  
**soldered** by immersion in a molten bath containing a fluid tin lead  
 alloy (6). The elements are conveyed on an endless flexible metal belt  
 (1). The conveyor belt (1) **surfaces** are **treated** with a  
 2 to 5 m copper coating with supplementary longitudinal **silver**  
 plated strips for contact with the pins of the assemblies. The surplus  
 alloy is removed by passing the conveyor belt with assemblies through the  
 extractor (7) which has fixed and moving jaws (9,10,11,12) enclosing a  
 capillary space (13) and exerting a very light pressure on the belt.

USE/ADVANTAGE - The **solder** coating is uniformly applied and  
**solder** consumption is reduced.

1/4

FS CPI EPI

FA AB

MC CPI: L03-D03F; L03-H04E3; M23-A03

EPI: U11-E; V04-R02; V04-R04A

L141 ANSWER 57 OF 77 INSPEC COPYRIGHT 2000 IEE

AN 1985:2409147 INSPEC DN B85017983

TI **Surface treatment** of single-face printed circuits.

AU Hummel, M.

SO Radioindustria Elettronica - Televizione (Sept. 1984) vol.8, no.9,  
 p.363-6. 0 refs.

CODEN: RELTDQ ISSN: 0391-4291

DT Journal

TC Experimental

CY Italy

LA Italian

AB Describes protective **surface treatment** systems for  
 single-face printed circuits, with special reference to hot-tinning, a  
 method ensuring long-term protection. Other methods use varnish, mostly  
 based on rosin with additives including a softener to prevent cracking at  
 low temperatures, and applied to the polished **copper** before the  
 components are **soldered** on. Moisture tends to penetrate between  
 varnish and **copper**. This does not occur with metal coatings  
 (tin/lead, **silver**, gold, rhodium) applied to the **copper**  
 by **plating** or other means. Hot-tinning is the preferred method.

CC B2210D Printed circuit manufacture

CT PRINTED CIRCUIT MANUFACTURE; SURFACE TREATMENT

ST tin; lead; Sn; Pb; Cu; Au; Ag; hot-tinning; rosin; Rh;  
 printed circuits; **surface treatment systems**; varnish;  
**copper**; metal coatings; **silver**; gold; rhodium

ET Sn; Pb; Cu; Au; Ag; Rh

L141 ANSWER 58 OF 77 HCAPLUS COPYRIGHT 2000 ACS  
 AN 1983:514616 HCAPLUS  
 DN 99:114616  
 TI Additive methods for producing printed circuit boards  
 IN Gesemann, Renate; Bechtloff, Udo; Gierth, Lothar; Gisske, Konrad;  
 Gesemann, Hans Juergen; Richter, Falk; Mossig, Guenter; Hofmann, Hansgeorg  
 PA Ger. Dem. Rep.  
 SO Ger. (East), 9 pp.

CODEN: GEXXA8

DT Patent

LA German

IC H05K003-02

CC 76-14 (Electric Phenomena)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DD 159932	Z	19830413	DD 1981-228522	19810323
AB	An economic and highly precise method for placing conductor paths with good adhesion and <b>solderability</b> on high-polymer boards consists of patterning the conductor paths with a photosensitive emulsion, exposing the <b>surface</b> , to form catalysts, and then <b>treating</b> in a bath to deposit <b>metals</b> by redn. Thus, a polytetrafluoroethylene substrate was patterned with a Ag photog. emulsion, exposed to a 400-W quartz lamp for 5 s, developed, fixed, washed, dried, heated at 230.degree. for 45 min, exposed to a 0.5% PdCl <sub>2</sub> soln., washed, and coated with Ni on the paths.				
ST	conductor path printed circuit board; catalyst printed circuit conductor; redn catalyst printed circuit conductor; photosensitive emulsion printed circuit; polymer board printed circuit; <b>silver</b> photog emulsion printed circuit; palladium catalyst nickel printed circuit				
IT	Electric conductors (fixing of catalysts on boards for redn. deposition of)				
IT	Reduction catalysts (fixing of, on printed circuit boards for conductor-path prepn.)				
IT	Photographic emulsions (in prepn. of printed-circuit board conductor paths)				
IT	Polymers, uses and miscellaneous				
RL	USES (Uses) (printed-circuit boards from)				
IT	Electric circuits (printed, boards, fixing of catalyst on, for deposition of <b>metal</b> conductors)				
IT	7440-05-3, uses and miscellaneous RL: CAT (Catalyst use); USES (Uses) (catalysts, in redn. of <b>metal</b> ions in printed-circuit board fabrication)				
IT	7440-02-0, uses and miscellaneous RL: USES (Uses) (conductors of, for printed-circuit boards)				
IT	7440-22-4, uses and miscellaneous RL: USES (Uses) (for fixing of palladium chloride on printed-circuit board paths)				
IT	7647-10-1 RL: USES (Uses) (in printed-circuit board fabrication)				
IT	9002-84-0 RL: USES (Uses) (printed-circuit board from)				

L141 ANSWER 59 OF 77 WPIDS COPYRIGHT 2000 DERWENT INFORMATION LTD  
 AN 1983-15174K [07] WPIDS  
 DNN N1983-028303 DNC C1983-014751

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TI Printed circuit board mfr. - by printing resistance paste layout and adhesion promoter layer for conductor tracks.  
 DC A85 L03 U11 U14 V01 V04  
 IN AMBROS, P; MULLER, W  
 PA (PREI) PREH ELEKTRO FEINMECHANIK  
 CYC 5  
 PI EP 71003 A 19830209 (198307)\* DE 33p  
     R: AT FR GB IT  
     DE 3130159 A 19830217 (198308)  
     EP 71003 B 19851009 (198541) DE  
     R: AT FR GB IT  
     DE 3130159 C 19870205 (198705)  
 ADT EP 71003 A EP 1982-104977 19820607; DE 3130159 A DE 1981-3130159 19810730  
 PRAI DE 1981-3130159 19810730  
 REP CH 616454; DD 93370; DD 94423; DE 1571802; DE 1620768; DE 1621207; DE 2014737  
 IC C23C003-02; C23C018-38; C23C020-04;  
     H05K003-12  
 AB EP 71003 A UPAB: 19930925  
     PCBs with resistors and/or contacts in integrated circuits are produced by an additive technique. In the first step the resistors are printed from a resistance paste, followed by the application of a sensitised adhesion promoter. The exposed areas of the latter are **copper plated** by a currentless technique to produce the conductor tracks in the desired layout.  
     Pref. material for the substrate (31) is a phenolic, epoxy or **polyimide** resin-hard paper or an injection moulding of polyphenylene oxide, polyphenylene sulphide, **polyimide**, **polyamidoimide** or polyphenylene sulphone. The adhesion promoter layer (34) pref. has a basis of satd. polyester and isophoron di-isocyanate with epoxy resin, acrylamide resin with a content of hydroxy methyl groups and a melamine formaldehyde resin. For insulation it can contain acrylic resins and/or PVAc resins. The resistance layer (32) is a paste which has in the binder matrix particles of pyropolymer, carbon black, graphite, **silver** or nickel with a particle size of under 6 microns in dispersed form. The conductor tracks are marked L. The Cu contacts (35) are pref. protected by a low-ohm pyropolymer paste (36).  
     Simple and low-cost substrates can be used, without narrow restrictions for burn-in temps. Good adhesion and **solderability** are ensured.  
     3e/5  
 FS CPI EPI  
 FA AB  
 MC CPI: A12-E07A; L03-H04E  
     EPI: U11-A05; V01-A02C; V04-R02  
  
 L141 ANSWER 60 OF 77 COMPENDEX COPYRIGHT 2000 EI  
 AN 1984(8):145493 COMPENDEX  
 TI PRECIOUS **METAL** ELECTROFORMED REFLECTORS.  
 AU Epner, David (Cohan-Epner Co, Brooklyn, NY, USA)  
 MT 70th AES Annual Technical Conference Proceedings (American Electroplaters' Society).  
 MO American Electroplaters' Soc, Winter Park, Fla, USA  
 ML Indianapolis, Indiana, USA  
 MD 27 Jun 1983-30 Jun 1983  
 SO Annual Technical Conference - American Electroplaters' Society 70th. Publ by American Electroplaters' Soc, Winter Park, Fla, USA M-2, 3p  
     CODEN: ATCSDW ISSN: 0270-2622  
 PY 1983  
 MN 04411  
 DT Conference Article  
 LA English  
 AB No abstract available

CC 941 Acoustical & Optical Measuring Instruments; 539 Metals Corrosion & Protection; 547 Precious & Rare Earth Metals & Alloys  
 CT \*OPTICAL INSTRUMENTS:Electroforming  
 ST SILVER OPTICAL REFLECTORS; ELECTROFORMED ELLIPTICAL REFLECTORS; MANDRELS;  
 SILVER PLATING BATH; ELECTROCLEANING

L141 ANSWER 61 OF 77 WPIDS COPYRIGHT 2000 DERWENT INFORMATION LTD  
 AN 1982-09755J [51] WPIDS  
 TI Plating conducting layer placed on dielectric - used for multilayer circuit for hybrid circuit.  
 DC L03 M13 U11 U14 V04  
 IN FOUCHER, J C; MOLIN, G  
 PA (CSFC) LIGNES TELEGRAPH & TELEPHON  
 CYC 1  
 PI FR 2505367 A 19821112 (198251)\* 8p  
 PRAI FR 1981-9226 19810508  
 IC C23C001-04; C23F017-00; H01L021-28; H01L049-02; H05K003-46  
 AB FR 2505367 A UPAB: 19930915  
 Plating of conductive layer on dielectric comprises (a) **plating** by **immersion**; (b) screen printing of a **solder** paste on the regions **plated** by **immersion**; (c) placing the components on the plated zones; and (d) re-fusing the assembly.  
 Pref. the **plating** by **immersion** takes place in an alloy contg. at least 2 of Sn, Pb and Ag, and the **solder** contains at least 2 of Sn, Pb and Ag. Pref. the re-fusion takes place at a temp. greater than 30 deg.C above the fusion temp. of the two alloys used during the first and second stages.  
 Used in multilayer circuits for hybrid circuit applications. Process gives a strong connection between the conducting layer and the dielectric.  
 FS CPI EPI  
 FA AB  
 MC CPI: L03-D03D; M13-B; M23-A  
 EPI: U11-C05C; U14-H04; V04-R02; V04-R05

L141 ANSWER 62 OF 77 COMPENDEX COPYRIGHT 2000 EI  
 AN 1982(12):163098 COMPENDEX DN \*8294916; 8212112871  
 TI CO-DEPOSITION OF COPPER AND ZINC INCLUSION IN ELECTRODEPOSITION OF SILVER FROM SILVER CYANIDE BATH.  
 AU Kubota, Noboru (Ind Res Inst of Kumamoto Prefect, Jpn); Horikoshi, Toru; Sato, Eiichi  
 SO Electrochim Acta v 27 n 9 Sep 1982 p 1227-1232  
 CODEN: ELCAAV ISSN: 0013-4686  
 PY 1982  
 LA English  
 AB The co-deposition behavior of a trace of **copper** and zinc as an impurity in cyanide **baths** for **silver plating** was studied by means of a radioactive tracer. The authors selected  $^{64}\text{CuCN}$  and  $^{65}\text{Zn}(\text{CN})_2$  as a labelled compound and added it to the cyanide **baths** for **silver plating**. Each amount of **copper** and zinc co-deposited with silver increased with increasing **copper** and zinc concentration in **silver plating** **baths** and temperature. It was found that co-deposition of **copper** and zinc depended on cathode potentials and was not diffusion-determining. The co-deposition of **copper** abruptly increased in the high current density range. In the potential range **Cu** co-deposition is observed with **Cu** reversible potential through limiting current of silver deposition, and evolution of hydrogen. 9 refs.

CC 547 Precious & Rare Earth Metals & Alloys; 539 Metals Corrosion & Protection; 544 Copper & Alloys; 546 Lead, Tin, Zinc, Antimony & Alloys  
 CT \*SILVER AND ALLOYS:Electroplating; COPPER AND ALLOYS; ZINC AND ALLOYS  
 ET C\*Cu\*N; CuCN; 64CuCN; is; Cu is; 64Cu; Cu cp; cp; C cp; N cp; C\*N\*Zn; Zn(CN)2; 65Zn(CN)2; Zn is; 65Zn; Zn cp; Cu; C\*O; CO; O cp  
 KATHLEEN FULLER EIC 1700 308-4290

L141 ANSWER 63 OF 77 COMPENDEX COPYRIGHT 2000 EI  
 AN 1983(3):37221 COMPENDEX  
 TI COLOUR OF GOLD ELECTRODEPOSITS MEASURED SPECTROPHOTOMETRICALLY.  
 AU Brown, Geraldine (City of Birmingham Polytech, Engl); Arrowsmith, D.J  
 MT Annual Technical Conference - Institute of Metal Finishing, 1981.  
 MO Inst of Met Finish, London, Engl  
 ML Harrogate, Engl  
 MD 05 May 1981-09 May 1981  
 SO Publ by Inst of Met Finish, London, Engl Sess 2, p 53-98  
 PY 1981  
 MN 01439  
 DT Conference Article  
 LA English  
 AB No abstract available  
 CC 539 Metals Corrosion & Protection; 741 Optics & Optical Devices; 941  
 Acoustical & Optical Measuring Instruments  
 CT \*GOLD PLATING:Control  
 ST GOLD AND GOLD ALLOY ELECTRODEPOSITS; COLOR RANGE; SPECTROPHOTOMETRIC COLOR  
 MEASUREMENT; COLOR TRIANGLE; COVERING POWER; COPPER AND  
 SILVER ADDITION TO GOLD PLATING BATHS; SMOOTH  
 COLOR TRANSITION; UNDULATING EFFECT; ELECTRODEPOSITED COLORED GOLDS;  
 COLORIMETRIC MEASUREMENTS ON VARIOUS METALS AND ALLOYS

L141 ANSWER 64 OF 77 COMPENDEX COPYRIGHT 2000 EI  
 AN 1981(11):5722 COMPENDEX DN 811194946  
 TI NEW SILVER PLATING BATH FOR ELECTRONIC  
 APPLICATIONS.  
 AU Krumbein, S.J. (AMP Inc, Harrisburg, Pa); Lerner, L.B.; Reed, A.H.  
 SO Annu Tech Conf Am Electroplat Soc 67th, Milwaukee, Wis, Jun 22-26 1980.  
 Publ by Am Electroplat Soc, East Orange, NJ, 1980 Pap F-4, 8 p  
 CODEN: ATCSDW ISSN: 0270-2622  
 PY 1980  
 LA English  
 AB Silver plated from this bath has good contact properties, and was less  
 susceptible to tarnishing than a conventional alkaline cyanide bath.  
 Surface treatment can further reduce tarnishing and reduce or  
 eliminate electromigration. 3 refs.  
 CC 539 Metals Corrosion & Protection  
 CT \*SILVER PLATING:Solutions

L141 ANSWER 65 OF 77 METADEX COPYRIGHT 2000 CSA  
 AN 1980(4):55-656 METADEX  
 TI Solderability of Wire Outputs of Components for Electronics.  
 AU Smejkal, A.  
 SO Zvaranie (Jan. 1979) 28, (1), 19-20  
 DT Journal  
 LA Czech  
 AB The mechanism of solder joint formation, surface treatment (coating with  
 Sn, Ag, Au, Pd), passivation of the surrounding metal, and methods of are  
 discussed. Testing for solderability with the bead using equipment KU 1532  
 A is described and is recommended for the electronic industry.-V.E.B.  
 CC 55 JOINING  
 CT Wire: Soldering; Solderability; Soldered joints: Coating; Passivation;  
 Electronics  
 ET Sn; Ag; Au; Pd

L141 ANSWER 66 OF 77 METADEX COPYRIGHT 2000 CSA  
 AN 1979(5):55-684 METADEX  
 TI Surface Treatment Prior to Soldering.  
 AU Srinivasamurthy, S.; Yegneswaran, A.H.; Raman, K.S.  
 SO J. Electrochem. Soc. India (Jan. 1978) 27, (1), 47-51  
 DT Journal  
 LA English

AB Degreasing, pickling and use of fluxes in the preparation of surfaces to be soldered are described. Use of corrosive fluxes is shown to necessitate proper cleaning of the soldered components. Ultrasonic cleaning and vapour degreasing are suggested for mass production. In very difficult cases prior metallic coating with Au or Ag have given good results. 14  
ref.-E.S.D.

CC 55 JOINING

CT Soldering; Degreasing; Pickling; Cleaning; Silver: Coatings; Gold: Coatings

ET Au; Ag

L141 ANSWER 67 OF 77 WPIDS COPYRIGHT 2000 DERWENT INFORMATION LTD

AN 1977-63888Y [36] WPIDS

TI Electroless plating of tin on **copper** metal or alloy - using **soln.** contg. heavy metal complexing agent, stannic and cuprous ions, and sodium hypochlorite.

DC M13

PA (TOKE) TOKYO SHIBAURA ELECTRIC CO

CYC 1

PI JP 52089533 A 19770727 (197736)\*

PRAI JP 1976-6486 19760123

IC C23C003-02

AB JP 52089533 A UPAB: 19930901

Thick Sn coating layer having no pin holes (no pores) is formed on **copper** (alloy), which is to be **soldered**.

The Cu (alloy) is dipped in an electroless Sn plating bath obtd. by adding complexing agent of heavy metal e.g. Au, Ag, Pt, Pd, Ru, Co, Ni etc. as catalyst 0.001-0.1 mol/l into a **soln.** contg. cuprous ions. stannic salt and reducing agent e.g. sodium hypochlorite, for reducing stannic salt to Sn.

In an example, a degreased **Cu plate** (0.8 mm) was dipped in a **soln.** comprising SnCl<sub>2</sub> 30 g/l, thiourea 60 g/l. sodium hypochlorite 25 g/l, HCl 50 ml/l and K<sub>2</sub>(PdF<sub>6</sub>) 1 g/l (0.003 mol/l at 70 degrees C for 10-50 min. Sn layer 1-5 um thick was formed on the surface.

FS CPI

FA AB

MC CPI: M13-B

L141 ANSWER 68 OF 77 WPIDS COPYRIGHT 2000 DERWENT INFORMATION LTD

AN 1977-47489Y [27] WPIDS

TI Surface treatment of metal substrate prior to soldering - comprises physical or chemical roughening process.

DC M13 M23 P55 P56

PA (TOYO) TOYO NEKKI KK

CYC 1

PI JP 52007349 A 19770120 (197727)\*

PRAI JP 1975-83724 19750708

IC B23K001-20; B23P003-00; C23C017-00

AB JP 52007349 A UPAB: 19930901

Method comprises physically or chemically roughening the surface of the substrate to such an extent that permits the formation of a coating of a molten metallic substance on the roughened surface, adhering or adding a metal having a lower m.pt. than the substrate to the roughened surface. This is followed by heating the assembly, and thus coating the surface of the substrate with the molten metal to form a metallic coating on it, or bonding two parts of the substrate metal simultaneously with the formation of the metallic coating.

The lower melting metal is, e.g., a metal element or an alloy, and when simultaneous bonding is desired, the use of brass **solder**, copper **solder**, silver **solder** and other alloy **solder** is effective.

The method does not cause environmental pollution like the plating method, and the cost of processing can be reduced.

FS CPI GMPI  
 FA AB  
 MC CPI: M13-H; M23-A

L141 ANSWER 69 OF 77 WPIDS COPYRIGHT 2000 DERWENT INFORMATION LTD  
 AN 1977-02055Y [02] WPIDS

TI Electroless nickel plating bath - for plating esp. aluminium alloys gives high deposition rate and stability.

DC E14 E19 M13  
 PA (SIEI) SIEMENS AG

CYC 12

PI BE 845655 A 19761215 (197702)\*  
 DE 2538817 A 19770303 (197710)  
 NL 7608033 A 19770303 (197711)  
 SE 7609317 A 19770328 (197715)  
 DK 7603431 A 19770425 (197720)  
 FR 2322209 A 19770429 (197722)  
 BR 7605653 A 19770809 (197734)  
 ZA 7605251 A 19770704 (197738)  
 DE 2538817 B 19771006 (197741)  
 AT 7605585 A 19780215 (197811)  
 GB 1507965 A 19780419 (197816)  
 CH 630415 A 19820615 (198228)  
 IT 1065234 B 19850225 (198523)

PRAI DE 1975-2538817 19750901

IC C23C003-02; C25C000-00

AB BE 845655 A UPAB: 19930901

A Ni electroless plating bath for metals esp. Al alloys comprises a Ni salt, complex salts, Na hypophosphite, an accelerator in the form of a water sol. polyhydroxylated deriv. of benzene which is sol. in water and a water sol. Cu salt.

The bath contains: (a) 30-150 g/l complexing agent; (b) 10-50 g/l Na hypophosphite and 5-10 g/l accelerator; (c) a large amt. of stabiliser, a topping-up soln. of complex Ni salt being used which contains 1-5 g/l CuSO<sub>4</sub>; and (d) a Ni content during the process which should not fall below 7g/l.

Deposn. rates are high and the bath remains stable. A bright Ni coating is obtd. even at large thicknesses. The coatings can be used as intermediate layers for electro-deposn. e.g. of Ag which will adhere well. Low operating temp. (80-94 degrees C) can be used. At these temps. discomfort due to ammonia fumes is reduced. Thick Ni coatings, is approx. 50 mu can be obtd. with controlled operation.

Copper-plated wires or junctions which have been electroless plated with Ni can be soldered to semiconductors.

Used forged or cast Al parts can be plated, such as, antennae, parts of satellites, cable-connecting boxes, etc. Based of transistors can also be plated. Thick Ni coatings can be applied to flasks of pumps for cooling agents or to press. regulators and to ring-compressors for liqs. and roller guides.

FS CPI  
 FA AB  
 MC CPI: E10-C03; E31-K07; E35-A; M13-B

L141 ANSWER 70 OF 77 HCPLUS COPYRIGHT 2000 ACS  
 AN 1975:505436 HCPLUS

DN 83:105436

TI Forming solderable coating on alloys

IN Carr, John M.; Mentone, Pat F.

PA Buckbee-Mears Co., USA

SO U.S., 3 pp.

CODEN: USXXAM

DT Patent

LA English

IC C23B; B23P  
NCL 204040000

CC 72-6 (Electrochemistry)

Section cross-reference(s): 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 3878065	A	19750415	US 1974-437944	19740130
	CA 1034899	A1	19780718	CA 1974-207516	19740821
	GB 1456769	A	19761124	GB 1974-37111	19740823
	NL 7411586	A	19750801	NL 1974-11586	19740830
	BE 819667	A2	19741231	BE 1974-148312	19740909
	FR 2259165	A1	19750822	FR 1974-33721	19741007
	JP 50109140	A2	19750828	JP 1974-116021	19741008
	JP 58005275	B4	19830129		
	DE 2457201	A1	19750731	DE 1974-2457201	19741204

PRAI US 1974-437944 19740130

AB Lead coating frames for elec. plating circuits have preferably been made of alloys such as Kovar contg. Ni, and it has been difficult to solder elec. connections to them that withstand service conditions such as baking at 900.degree.F without blistering or peeling. This can be avoided by careful cleaning and multiple plating in a special manner herein described. The articles are 1st anodically cleaned in dil. NaOH soln., pickled in 20% HCl, and activated anodically in an aq. KCN soln., with intervening rinsing, before plating with a Cu strike from a cyanide bath, spray rinsing, and following with a Ag strike without drying, and with the plating current applied before immersing in the bath, to avoid any immersion-plating of Ag which would have weak adherence. After this prepn. a mixed plate of Ag and Cu together is applied to give a surface which is always solderable. Addnl. steps which are recommended as insurance against occasional inferior results, are the presence in the Cu electrolyte of a dummy article, of similar size, shape, and compn. to those being treated, to form a Cu plating sink, and the use of an anode bag.

ST silver copper solderable electroplating

IT Electric circuits

(printed, electroplating of, for soldering)

IT 37218-25-0

RL: PRP (Properties)

(electroplating of, on alloys for soldering)

L141 ANSWER 71 OF 77 HCAPLUS COPYRIGHT 2000 ACS

AN 1970:16766 HCAPLUS

DN 72:16766

TI Wide-band-gap semiconductor devices

IN Garwacki, Walter

PA General Electric Co.

SO U.S., 4 pp.

CODEN: USXXAM

DT Patent

LA English

IC H01L

NCL 317237000

CC 71 (Electric Phenomena)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 3479573	A	19691118	US 1967-616366	19670215
	GB 1173875	A	19691210	GB 1968-1173875	19680115
	FR 1554398	A	19690117	FR 1968-1554398	19680215

PRAI US 1967-616366 19670215

AB Wide-band-gap p-type semiconductor devices are provided, which have improved nonrectifying contacts over a wide range of temps. Thus, a

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single-crystal wafer of p-type ZnTe is etched in boiling NaOH for 4-5 sec and washed in distd. H<sub>2</sub>O. The wafer is placed on a flat heater surface maintained at 40.degree. in air. A drop of a very dil. LiNO<sub>3</sub> soln. is deposited on the wafer and allowed to dry. The wafer is enclosed in a bell jar with a H atm. The temp. of the wafer is raised to 350.degree. and held 1 min. The LiNO<sub>3</sub> melts and spreads over the surface of the wafer and penetrates into the crystal surface. The wafer is allowed to cool, rinsed in distd. H<sub>2</sub>O, and dried. A drop of HAuCl<sub>4</sub>.3H<sub>2</sub>O soln. is deposited so as to overlap 1/2 of the surface of the treated Li region. The auric acid immediately reacts with the surface, forming a surface adjacent region contg. Au and an exposed layer of Au at the top. The reaction is completed in 2 min after the bell jar is placed over the wafer. An atm. of dry H is admitted into the bell. The wafer is heated to 100.degree. and held at temp. for 30 sec. The bell jar is removed and the wafer allowed to cool. A small amt. of an In-Ag solder is pressed into intimate contact with the surface-treated regions. An elec. contact wire may be soldered by conventional techniques to form the contact. When the contact is formed, it is substantially ohmic and nonrectifying in characteristic at 26-373.degree.K without any substantial variation. The process is repeated to form the contact to the opposite side of the wafer, and the Ag-In solder is used to fasten the wafer to a Cu block in H at 100.degree..

ST semiconductors devices; wide band gap semiconductors; nonrectifying contacts semiconductors; contacts nonrectifying semiconductors

IT Electron acceptors

(lithium, in elec. contacts to zinc telluride of p-type)

IT Electric contacts

(to zinc telluride of p-type, lithium in)

IT 7440-57-5, uses and miscellaneous

RL: USES (Uses)

(elec. contacts of lithium and, to zinc telluride of p-type)

IT 1315-11-3

RL: USES (Uses)

(elec. contacts to p-type, lithium in)

IT 7439-93-2, uses and miscellaneous

RL: USES (Uses)

(electron acceptors, in elec. contacts to zinc telluride to p-type)

IT 1315-09-9

RL: USES (Uses)

(solid solns. with zinc telluride, elec. contacts to p-type, lithium in)

L141 ANSWER 72 OF 77 HCPLUS COPYRIGHT 2000 ACS

AN 1969:504649 HCPLUS

DN 71:104649

TI Bonding silver-cadmium oxide bodies

IN Emmert, Kenneth L.

PA Contacts, Inc.

SO U.S., 3 pp.

CODEN: USXXAM

DT Patent

LA English

IC B23K

NCL 029472900

CC 56 (Nonferrous Metals and Alloys)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 3466735	A	19690916	US 1967-616998	19670123

AB An improved method is provided for bonding Ag-CdO bodies to supports, which bonds have greatly improved shear strength. The method consists of: (1) placing the surface of the body to be bonded in contact with a die and aq. alkali metal cyanide soln.; (2)

applying a very thin **Ag** coating to the **treated** surface; (3) heating the body to 1200-1400.degree.F. for 1/2-24 hrs.; (4) inserting a **Ag** brazing alloy between the **Ag** coated surface and the support to form an assembly; and (5) heating the assembly to a temp. above the flow temp. of the alloy.

ST **silver** bonding Cd oxides; bonding **Ag** Cd oxides; cadmium oxides bonding **Ag**; oxides Cd bonding **Ag**

IT **Soldering**  
(brazing, of cadmium oxide-**silver** alloys)

IT **Silver** alloys, base  
(cadmium oxide-, brazing of)

IT Electric contacts  
(cadmium oxide-**silver** alloys for, brazing of)

IT Etching  
(of cadmium oxide-**silver** alloys, for brazing)

IT Coating materials  
(**silver**, on cadmium oxide-**silver** alloys for brazing)

IT Easy Flow 45  
RL: USES (Uses)  
(brazing with, of cadmium oxide-**silver** alloys)

IT 1306-19-0  
RL: USES (Uses)  
(alloys with **silver**, brazing of)

IT 7440-22-4, uses and miscellaneous  
RL: USES (Uses)  
(coatings of, on cadmium oxide-**silver** alloys for brazing)

IT 7727-54-0  
RL: USES (Uses)  
(etching by potassium cyanide and, of cadmium oxide-**silver** alloys for brazing)

IT 151-50-8  
RL: RCT (Reactant)  
(etching by, of cadmium oxide-**silver** alloys for brazing)

L141 ANSWER 73 OF 77 HCAPLUS COPYRIGHT 2000 ACS

AN 1969:494361 HCAPLUS

DN 71:94361

TI Preparing diamonds for bonding to a **metallic** base

IN Wellborn, William W.

SO U.S., 2 pp.

CODEN: USXXAM

DT Patent

LA English

IC B23K; B44D

NCL 029473100

CC 56 (Nonferrous Metals and Alloys)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 3465416	A	19690909	US 1965-508394	19651117
AB	Diamonds are cleaned by NH4OH and activated in solns. of SnCl2 and PdCl2, then coated with either an aq. chem. metal-plating soln., or with a suspension of a metal carbonate in acetone, either coating being carefully dried. The coated diamonds are heated in a reducing atm. to 2000-500.degree.F. to decomp. any metal oxide present and combine the metal with C from the diamonds, producing a bond through carbide with a metal surface layer which can be bonded firmly to any <b>metallic</b> substrate with <b>Ag</b> solder. Suitable metals are Co, Ni, Fe, W, Mo, Ta, and <b>Ag</b> . The activating aq. solns. can be 20 g./l. SnCl2 + 40 ml./l. HCl, or 0.1 g./l. PdCl2 + 10 ml./l. HCl. A suitable chem. plating soln. contained CoCl2.6H2O 12, Rochelle salt 32, and NaBH4 4.74 g./l., the 1.				

KATHLEEN FULLER EIC 1700 308-4290

being 50% NH4OH by vol. The sensitized diamonds were heated to 40-50.degree. in this **soln.** for **plating**. A suitable carbonate suspension in acetone was prep'd. from CoCO<sub>3</sub>, ppt'd. by Na<sub>2</sub>CO<sub>3</sub> from a CoCl<sub>2</sub> **soln.**, by mixing 4 oz. with an equal wt. of cellulose acetate in 1 qt. acetone. The diamonds coated with such a "paint" were dried at 150.degree. to decomp. the carbonate to oxide, which was reduced later for bonding, preferably at 2100.degree.F. The claims here cover only the latter process using any of the stated **metal** carbonates or other salt decomposable to oxide. The strength of bonding diamonds to 2 opposed **metallic** bases by this method (including **Ag soldering**) was 80% greater than by other known methods.

ST diamonds bonding **metals**; bonding diamonds **metals**;  
coating diamonds **metals**; **soldering metal**  
coated diamonds

IT **Soldering**  
(of diamonds to **metals**, **surface treatment**  
for)

IT Diamond  
(**soldering of**, **surface treatment for**)

L141 ANSWER 74 OF 77 HCAPLUS COPYRIGHT 2000 ACS

AN 1969:517792 HCAPLUS

DN 71:117792

TI Improved photovoltaic cells

IN Nakayama, Nobu; Yamaguchi, Kazufumi; Hirota, Eiichi

PA Matsushita Electric Industrial Co., Ltd.

SO Brit., 8 pp.

CODEN: BRXXAA

DT Patent

LA English

IC H01L

CC 71 (**Electric Phenomena**)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI GB 1161340 19690813 GB 19661223

AB A p-n junction semiconductor photovoltaic cell is described, comprising an n-type CdS sintered plate and an electrochem. formed p-type thin layer on one surface, the layer consisting of Cd, Cu, and S, and having a CdS-like structure with an accompanying CuS structure, and electrodes applied resp. to the thin layer and to another surface of the sintered body. E.g., com. available reagent-grade CdS powder is pressed into a sq. plate, 30 .times. 30 .times. 2.0 mm. thick. The pressed and compacted body is fired at 820.degree. for 4 hrs. in N. The CdS forms a sintered plate of n-type material with an elec. resistivity of 6 ohm-cm. and a d. of 4.7 g./cc. The surface is lapped and then etched with dil. HCl. The plate is then covered with a resin film to serve as a resist during subsequent electrochem. **treatment**, except at the **surface** which is to become the active surface of the cell. In the treatment process, the **plate** is **immersed** in 5% aq. CuSO<sub>4</sub> for 1 hr., using a c.d. of 0.1 ma./cm.<sup>2</sup> applied between the plate, as the cathode, and a Cu electrode immersed in the **soln.** as the anode. This produces a p-type **silver-gray** layer on the plate. The layer is then provided with a grid electrode applied by painting the surface with **Ag**. The other major surface is then polished to remove the resin resist and there is then applied to it an electrode of Ni, which can be deposited by electroless plating. Leads can then be **soldered** to the electrodes. The open-circuit photovoltage is 0.45 v. and the short-circuit current 35 ma./cm.<sup>2</sup> The calcd. photoelec. conversion efficiency is 8.4% with this cell.

ST photovoltaic cells; semiconductors photovoltaic cells; cadmium sulfides photovoltaic cells; sulfides Cd photovoltaic cells

IT Photoelectric cells

IT (cadmium sulfide, with electrochemically formed p-type surface layer)  
 1306-23-6, uses and miscellaneous  
 RL: USES (Uses)  
 (photoelec. cells, with electrochemically formed p-type surface layer)

L141 ANSWER 75 OF 77 COMPENDEX COPYRIGHT 2000 EI  
 AN 1970(11):5835 COMPENDEX DN 701151077  
 TI Anodes in **silver plating baths**.  
 Anoden in galvanischen Silberbaedern.  
 AU VON KRUSENSTJERN A  
 SO Galvanotechnik v 60 n 10 Oct 1969 p 767-71  
 PY 1969  
 LA English  
 AB One of the most important requirements of the anodes is that they should not disturb the current flow, and also that the **metal** content of the electrolyte remains constant over a longer period of time. The influence of the composition of the electrolyte on the anodes is described, and the anodes and their effect discussed. The use of insoluble anodes to be applied at a certain ratio is considered. 20 refs. In German.  
 51077  
 CC 539 Metals Corrosion & Protection  
 CT \*SILVER PLATING

L141 ANSWER 76 OF 77 HCPLUS COPYRIGHT 2000 ACS  
 AN 1968:492412 HCPLUS  
 DN 69:92412  
 TI Alternating current electrodes for electrochemical power cells  
 IN Coffman, Samuel W.  
 PA Coffman, Audrey D.; Coffman, Stephen W.; Coffman, John D.; Coffman, Mark J.  
 SO U.S., 5 pp.  
 CODEN: USXXAM  
 DT Patent  
 LA English  
 NCL 317231000  
 CC 77 (**Electrochemistry**)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 3400305	A	19680903	US 1964-390317	19640818
AB	A.c. single crystal semiconductor electrode for H <sub>2</sub> -O <sub>2</sub> fuel cells is prep'd. as follows, B-doped single crystal Si or Ge having elec. resistivity 0.5-5.0 ohm cm. is masked so that 1 surface is exposed the diffusion of P so that a pn-junction is formed 5-10 .mu. below the surface. The surface resistivity is 0.05-1.0 ohm. For use in the O <sub>2</sub> compartment of the fuel cell, 25 Si npn wafers are arranged on a <b>metal</b> plate in a mosaic pattern and covered with Teflon film. Polyurethane impregnating resin having a viscosity of 100 cp. is applied into each capillary region between the wafers and all outside edges and polymd. by heating in an oven. After masking each wafer in the form of a sq. annular ring, the mosaic is <b>immersed</b> in an electroless Au-plating bath and then in electroless Ni-plating bath. After removal of the mask, 0.1-1.0 mil thick Ni-coated Cu control signal terminal grid is <b>soldered</b> to the wafer mosaic by using soft <b>solder</b> and rosin flux. A Ni-plated Cu power terminal is <b>soldered</b> to the wafer mosaic. Voids between the control signal terminal and the power terminal are filled with impregnating resin which is then polymd. in oven. For use with H <sub>2</sub> electrode, catalytic storage sections are prep'd. by coating Ni screen assemblies which were prep'd. with a 0.0002-in. thick Pt-black microcrystn. film deposited from acidic Pt salt soln. For use with O <sub>2</sub> electrode, A Cu catalytic screen section is welded with Pb-Sn <b>solder</b> contg. 5 wt. % Ag. The catalytic surface is coated with reddish Cu <sub>2</sub> O by immersing the screen 3 times for 1 sec. in chlorinated hydrocarbon, boiling H <sub>2</sub> O, 30-40 wt. % HNO <sub>3</sub>				

at 60-80.degree.F., 1.0N NaHCO<sub>3</sub>, H<sub>2</sub>O, and drying for 30 min. at 300.degree.F. Alternately, catalytic storage sections can be prepared by retaining within the metal screen sintered porous granules of the resp. materials. If the electrode is used in conventional cells, more voltage and power are produced in the high current region. The delivery of either d.c. or a.c. can be started or stopped with a purely elec. control signal without sep. switch gear.

ST electrochem power cells; silicon semiconductor power cells; germanium semiconductor power cells; semiconductor power cells  
IT Semiconductors, electric (electrodes, fuel-cell, for alternating current)  
IT Electrodes (fuel-cell, semiconductor, for alternating current)  
IT Fuel cells (hydrogen-oxygen, semiconductor electrodes for, for alternating current)

L141 ANSWER 77 OF 77 METADEX COPYRIGHT 2000 CSA

AN 1994(3):58-313 METADEX

TI Properties of Silver Top.

AU Kanda, K. (Toyo Kohan); Mizobe, T. (Toyo Kohan)

SO Toyo Kohan Technical Report 28, 35-47, Graphs, Photomicrographs, Spectra, 34 ref.

ISSN: 0372-3496

DT Journal

CY Japan

LA Japanese

AB Silver Top is bright, black or gray electrogalvanized steel sheet which includes a small amount of co-deposits of cobalt and molybdenum. Also, three kinds of post-treatment are applied: chromate treatment for paint coating use, silicate treatment for non-coating use of the bright black surface, and organic treatment for soldering use. Silver Top has been developed on the basis of the technological point of view that the anodic reaction on the iron surface exposed by the dissolution of zinc and the cathodic reaction of Zn seems to be suppressed by the corrosion products containing the Zn, Co and Mo compounds formed on the deposits.

Consequently, excellent qualities can be obtained in comparison with a conventional electrogalvanized steel sheet. The properties of Silver Top are described.

CC 58 Metallic Coating

CT Journal Article; Strip steel; Casting; Galvanized steels: End uses; Zinc base alloys: Coatings; Cobalt: Alloying elements; Molybdenum: Alloying elements; Interface reactions: Corrosion effects; Electrolytic dissolution; Corrosion products; End uses; Tensile properties

ET Zn; Co; Mo

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